



# GeoInsight®

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## PROJECT MEMORANDUM

To: Joe LeMay, USEPA  
Jennifer McWeeny, MADEP  
Alex Sherrin, USEPA

From: Christene Binger and  
Kevin Trainer

Date: January 25, 2022

Project No. 2491-010

Re: Summary of PFAS Sampling Activities  
60 Olympia Avenue  
Woburn, Massachusetts

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This project memorandum provides a summary of per- and polyfluoroalkyl substances (PFAS) sampling activities performed in the former drum disposal area (FDDA) at 60 Olympia Avenue in Woburn, Massachusetts (the Site) on October 20, 2021. GeoInsight, Inc. (GeoInsight) conducted this sampling at the request of Olympia Nominee Trust in response to the September 24, 2021 letter (the Letter) from the United States Environmental Protection Agency (USEPA). The Letter requested the collection of groundwater samples for PFAS from a selected subgroup of monitoring wells at the Site.

### BACKGROUND

A release of volatile organic compounds (VOCs) was identified at the Site in the vicinity of a location where several 55-gallon drums were disposed on the ground surface. Elevated concentrations of chlorinated volatile organic compounds (VOCs), primarily TCE and tetrachloroethene (PCE), were detected in soil samples collected near the drums. This area is identified as the former drum disposal area (FDDA). Remedial activities, including the installation of a treatment cell, consisting of a sheet pile wall extending to 20 to 25 feet below grade surface (bgs) that contains an area approximately 60 feet wide by 150 feet in length, were initiated in 2004. Refer to Figure 1 for the location of the treatment cell. Areas inside and outside of the treatment cell have been treated by in-situ chemical oxidation using sodium permanganate since approximately 2005.

### GROUNDWATER SAMPLING ACTIVITIES

On October 20, 2021, GeoInsight collected groundwater samples from the seven (7) monitoring wells identified in the Letter. Monitoring wells MW-202S, MW-202D, MW-205D,

and MW-206D are located inside the treatment cell and monitoring wells MW-215M, MW-216S, and MW-217M are located outside the treatment cell). The monitoring wells are constructed with 3-foot pre-packed screen intervals.

Groundwater samples at the Site have been historically collected using modified low-flow techniques using peristaltic pumps and disposable polyethylene tubing. Modified methods were established because the wells are small diameter and constructed with 3-foot prepacked screens below the water table, which limits stagnant water in the wells, and because residual sodium permanganate present in some monitoring wells could damage or interfere with flow-through sensors on monitoring equipment. Sampling is performed by purging individual wells for approximately 15 minutes at a low flow rate to remove stagnant water from the well screen and obtain representative water from the formation prior to sampling. After purging for 15 minutes, field observations about the purge water (primarily color) are collected. During routine sampling for VOC analysis, GeoInsight typically neutralizes residual permanganate present in individual groundwater samples using ascorbic acid.

The sampling procedures for this sampling event were consistent with the previous sampling events for VOCs sample analysis. However, GeoInsight did not neutralize the samples collected for PFAS analysis. During this sampling event, quality assurance/quality control (QA/QC) samples were collected from well MW-215M, including a duplicate, matrix spike and matrix spike duplicate. GeoInsight also collected two field blanks, identified as MW-401A and MW-401B, for laboratory analysis. Field blanks were prepared by each sample team member by pouring PFAS-free water into sample containers in the field during the monitoring event.

Samples were submitted to Absolute Resource Associates (ARA) of Portsmouth, New Hampshire for analysis of PFAS using an isotope dilution method, similar to USEPA Method 533. Method 533 was modified by the laboratory for analysis of non-drinking water samples. GeoInsight selected this method based upon input from the laboratory regarding the methods specified in the Letter and our subsequent discussions with USEPA and the Massachusetts Department of Environmental Protection (MADEP) after the Letter was issued.

## **ANALYTICAL RESULTS AND FIELD OBSERVATIONS**

The results of the groundwater sampling event are summarized on attached Table 1. Detected concentrations of PFAS were below the applicable USEPA Drinking Water Health Advisory level for the sum of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) of 70 nanograms per liter (ng/L). Detected concentrations were also below the MADEP Method 1 GW-1 Risk Characterization standard for PFAS (sum of the PFAS6), with the exception of the results from monitoring well MW-202S where the sum of the reported PFAS6 compounds (23.62 ng/L) slightly exceeded the MADEP Method 1 GW-1 level for PFAS of 20 ng/L. PFAS were not detected in the field blank (MW-401A and MW-401B) samples.

The purple color that is characteristic of permanganate solution was observed to be present in groundwater from monitoring wells MW-202S, MW-202D, MW-205D, MW-206D, and MW-217M. A purple color was not observed in the groundwater purged from monitoring wells MW-215M or MW-216S. Table 2 includes observations of purple color recorded during 2021 monitoring events for the wells selected for PFAS sampling, along with detected

concentrations of TCE obtained from samples collected during these monitoring events. Table 2 also includes the maximum TCE concentration historically detected in these wells for reference. The laboratory reported potential interference caused by amount of sodium permanganate in the samples from monitoring wells MW-202D and MW-217M that were analyzed at two different dilutions. The lower dilution value is reported in Table 1 because method analogues indicated better recovery in the lower volume samples. The laboratory also reported that the sample from monitoring well MW-206D contained sediment. The laboratory report states “as a result, the original sample container could not be rinsed. This may bias results low, as some PFAS readily adhere to surfaces.”

## DATA EVALUATION

In general, the detected PFAS concentrations were low, with none of the groundwater samples exceeding the USEPA Drinking Water Health Advisory level and only one sample where the sum of the PFAS6 compounds exceeded the MADEP Method 1 GW-1 Risk Characterization standard.

The analytical data indicated that the PFAS analytical results did not correlate well with the concentrations of dissolved TCE in groundwater samples from these monitoring wells in 2021 (Table 2). In general, the highest PFAS analytical results were detected in samples collected from monitoring wells where TCE concentrations in 2021 were low or non-detect. The PFAS data also did not correlate well with the historical maximum TCE concentration detected in these wells. The PFAS data also did not appear to correlate with well depth. Although the highest PFAS concentrations were detected in the samples collected from the MW-202 well couplet, the PFAS results did not appear to be distributed relative to a particular location, with PFAS detected both inside and outside the containment cell at similar concentrations.

Due to the poor correlation of the PFAS analytical results with TCE concentrations, and the lack of an obvious pattern to the analytical distribution, these data suggest that the PFAS detected in the water samples do not originate from the same source as the TCE impacts. The source of the detected PFAS is unknown, but the low concentrations suggest that non-point sources (e.g., atmospheric deposition) may be potential contributors to the detected PFAS in groundwater at the Site.

## ATTACHMENTS:

Table 1 – PFAS Groundwater Analytical Results

Table 2 – Summary of Monitoring Observations for Wells Selected for PFAS Testing

Figure 1 – Site Plan

Laboratory Analytical Report

**TABLE 1**  
**PFAS GROUNDWATER ANALYTICAL RESULTS**  
**60 OLYMPIA AVENUE - FDDA SITE**  
**WOBURN, MASSACHUSETTS**

| Investigation Area        | Sample Identification                | Sample Date | Screened Interval (feet) | Perfluorooctane Sulfonate (PFOS) | Perfluoro-n-Octanoic Acid (PFOA) | Perfluorohexane Sulfonic Acid (PFHxS) | Perfluorononanoic Acid (PFNA) | Perfluoroheptanoic Acid (PFHpA) | Perfluorodecanoic Acid (PFDA) | Sum PFOS and PFOA | PFAS6 SUM    |
|---------------------------|--------------------------------------|-------------|--------------------------|----------------------------------|----------------------------------|---------------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------|--------------|
|                           | MADEP Method 1 GW-1                  |             |                          | NS                               | NS                               | NS                                    | NS                            | NS                              | NS                            | NA                | 20           |
|                           | USEPA Drinking Water Health Advisory |             |                          | NS                               | NS                               | NS                                    | NS                            | NS                              | NS                            | 70                | NA           |
| FDDA Monitoring Wells     | MW-202S                              | 10/20/21    | 6.5-9.5                  | <b>6.7</b>                       | <b>11</b>                        | <b>2.6</b>                            | 0.82 J                        | <b>2.5</b>                      | ND (1.9)                      | 17.7              | <b>23.62</b> |
|                           | MW-202D                              | 10/20/21    | 14-17                    | <b>4.5</b>                       | <b>6.5</b>                       | 1.5 J                                 | 0.67 J                        | <b>1.4 J</b>                    | ND (1.8)                      | 11.0              | <b>14.57</b> |
|                           | MW-205D                              | 10/20/21    | 14-17                    | <b>2.6</b>                       | <b>4.6</b>                       | 1.1 J                                 | ND (2.1)                      | <b>0.71 J</b>                   | ND (2.1)                      | 7.2               | <b>9.01</b>  |
|                           | MW-206D                              | 10/20/21    | 14-17                    | <b>3.7</b>                       | <b>5.9</b>                       | 1.0 J                                 | ND (2.0)                      | <b>1.1 J</b>                    | ND (2.0)                      | 9.6               | <b>11.7</b>  |
|                           | MW-215M                              | 10/20/21    | 20-23                    | ND (1.7)                         | ND (1.7)                         | 0.49 J                                | ND (1.7)                      | 0.096 J                         | ND (1.7)                      | ND                | 0.586        |
|                           | MW-215M - DUP                        | 10/20/21    | 20-23                    | ND (2.0)                         | ND (2.0)                         | ND (2.0)                              | ND (2.0)                      | ND (2.0)                        | ND (2.0)                      | ND                | ND           |
|                           | MW-216S                              | 10/20/21    | 10-13                    | <b>3.0</b>                       | <b>4.2</b>                       | 0.92 J                                | ND (1.8)                      | <b>0.65 J</b>                   | ND (1.8)                      | 7.2               | <b>8.77</b>  |
|                           | MW-217M                              | 10/20/21    | 25-28                    | <b>2.9</b>                       | <b>4.3</b>                       | 1.6 J                                 | ND (1.8)                      | <b>0.97 J</b>                   | ND (1.8)                      | 7.2               | <b>9.77</b>  |
| QC Samples - Field Blanks | MW-401A                              | 10/20/21    | NA                       | ND (1.7)                         | ND (1.7)                         | ND (1.7)                              | ND (1.7)                      | ND (1.7)                        | ND (1.7)                      | ND                | ND           |
|                           | MW-401B                              | 10/20/21    | NA                       | ND (1.7)                         | ND (1.7)                         | ND (1.7)                              | ND (1.7)                      | ND (1.7)                        | ND (1.7)                      | ND                | ND           |

**NOTES:**

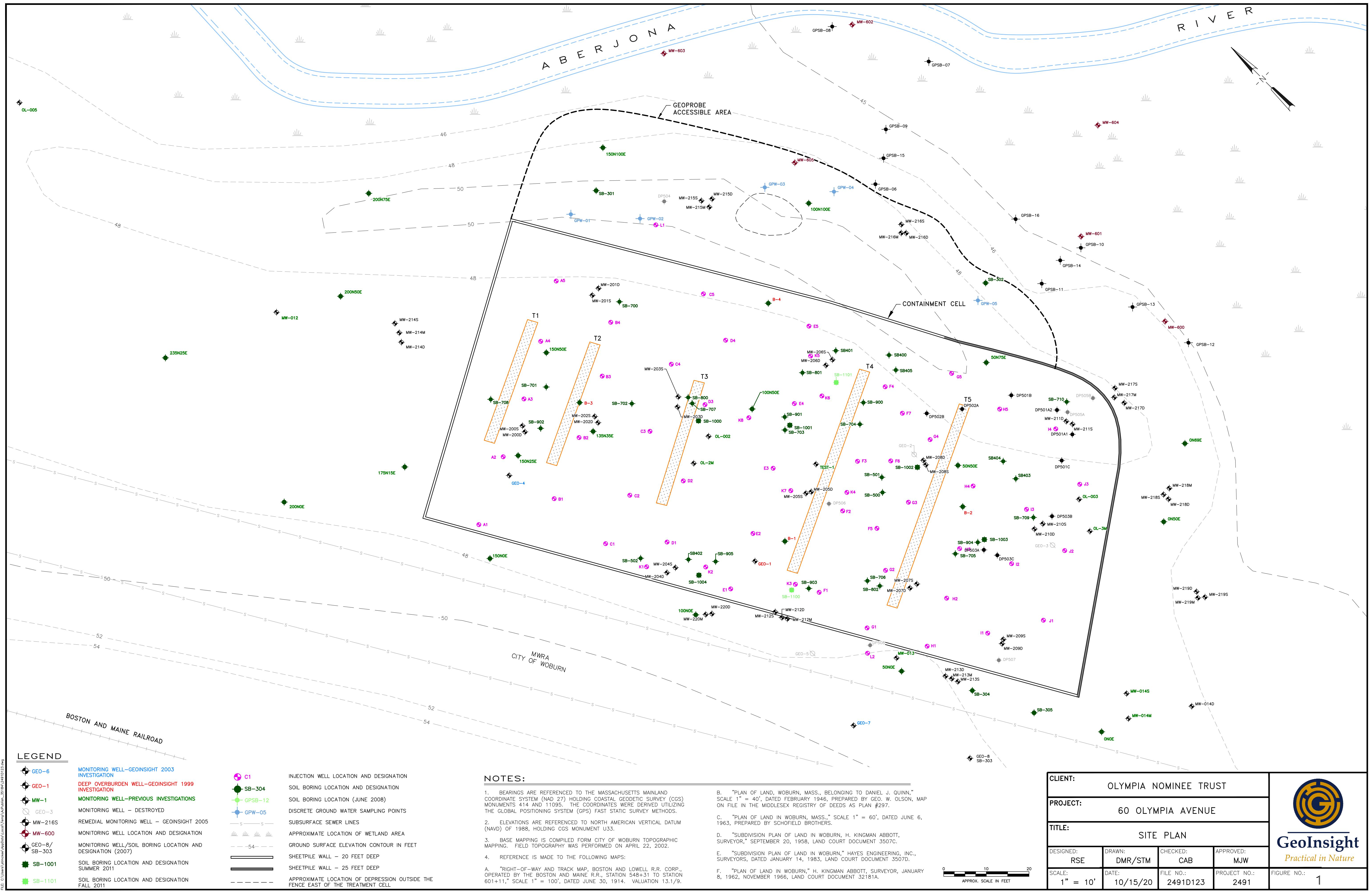
1. MADEP = Massachusetts Department of Environmental Protection.
2. Method 1 GW-1 = Method 1 GW-1 Risk Characterization Standard.
3. USEPA = United States Environmental Protection Agency.
4. Results reported in nanograms per liter (ng/L).
5. Bold value exceeds laboratory reporting limit (RL).
6. Shaded values exceed the MADEP Method 1 GW-1 Standard for PFAS6 (sum of six individual PFAS).
7. J = Estimated concentration between the RL and reportable detection limit (RDL).
8. ND (x) = constituent not detected above RL noted in parentheses.
9. NS = standard not established.
10. NA - not applicable.

**TABLE 2**  
**SUMMARY OF MONITORING OBSERVATIONS FOR WELLS SELECTED FOR PFAS TESTING**  
**60 OLYMPIA AVENUE - FDDA SITE**  
**WOBURN, MASSACHUSETTS**

| WELL IDENTIFICATION | Historical Data                  | 4/28/2021                |                          | 9/24/2021                |                          | 10/20/2021               |                          |                                |
|---------------------|----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------------|
|                     | Maximum TCE Concentration (ug/L) | Permanganate Color (0-4) | TCE Concentration (ug/L) | Permanganate Color (0-4) | TCE Concentration (ug/L) | Permanganate Color (0-4) | TCE Concentration (ug/L) | Sum PFAS6 Concentration (ng/L) |
| MW-202S             | <b>6,200</b>                     | 0                        | ND (25)                  | NM                       | NS                       | 2                        | <b>3.8</b>               | <b>23.62</b>                   |
| MW-202D             | <b>89,000</b>                    | <b>4</b>                 | ND (200)                 | NM                       | NS                       | <b>4</b>                 | ND (100)                 | <b>14.57</b>                   |
| MW-205D             | <b>120,000</b>                   | <b>3</b>                 | <b>7,400</b>             | <b>2</b>                 | <b>3,600</b>             | <b>2</b>                 | NS                       | <b>9.01</b>                    |
| MW-206D             | <b>100,000</b>                   | <b>1</b>                 | <b>1,200</b>             | <b>1</b>                 | <b>2,200</b>             | <b>1</b>                 | NS                       | <b>11.7</b>                    |
| MW-215M             | <b>1,700</b>                     | 0                        | <b>1,000</b>             | 0                        | <b>550</b>               | 0                        | NS                       | <b>0.586</b>                   |
| MW-216S             | <b>120,000</b>                   | 0                        | <b>28</b>                | 0                        | <b>40</b>                | 0                        | NS                       | <b>8.77</b>                    |
| MW-217M             | <b>320,000</b>                   | <b>4</b>                 | ND (1)                   | <b>3</b>                 | ND (2.5)                 | <b>4</b>                 | NS                       | <b>9.77</b>                    |

**NOTES:**

1. ug/L = micrograms per liter.
2. ng/L = nanograms per liter.
3. NM = Not measured.
4. NS = Not sampled.
5. ND (X) = not detected above laboratory reporting limit; reporting limit listed in parentheses.
6. BOLD exceeds laboratory reporting limit.
7. TCE = trichloroethylene.



# Laboratory Report



## Absolute Resource associates

124 Heritage Avenue Portsmouth NH 03801

Cameron Simmons

PO Number: None

GeoInsight, Inc.

Job ID: 59110

1 Monarch Drive

Date Received: 10/25/21

Suite 201

Littleton, MA 01460

Project: 60 Olympia-FDDA 2491

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below. The reported results apply to the sample(s) in the condition as received at the time the laboratory took custody. This report shall not be reproduced except in full, without written approval of the laboratory. The liability of ARA is limited to the cost of the requested analyses, unless otherwise agreed upon in writing.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,  
Absolute Resource Associates

Alex Alterisio

Date of Approval: 11/17/2021

Authorized Signature

Total number of pages: 51

### Absolute Resource Associates Certifications

New Hampshire 1732  
Maine NH902

Massachusetts M-NH902

## Sample Association Table

| Field ID          | Matrix | Date-Time Sampled | Lab#      | Analysis   |
|-------------------|--------|-------------------|-----------|--|
| MW-202S           | Water  | 10/20/2021 9:25   | 59110-001 | PFAS Free Water Liter<br>PFAS in Water by Isotope Dilution |
| MW-202D           | Water  | 10/20/2021 9:55   | 59110-002 | PFAS Free Water Liter<br>PFAS in Water by Isotope Dilution |
| MW-205D           | Water  | 10/20/2021 10:50  | 59110-003 | PFAS Free Water Liter<br>PFAS in Water by Isotope Dilution |
| MW-206D           | Water  | 10/20/2021 11:55  | 59110-004 | PFAS in Water by Isotope Dilution                          |
| MW-215M           | Water  | 10/20/2021 11:40  | 59110-005 | PFAS in Water by Isotope Dilution                          |
| MW-215 DUP        | Water  | 10/20/2021 12:40  | 59110-008 | PFAS in Water by Isotope Dilution                          |
| MW-216S           | Water  | 10/20/2021 13:30  | 59110-009 | PFAS in Water by Isotope Dilution                          |
| MW-217M           | Water  | 10/20/2021 12:50  | 59110-010 | PFAS in Water by Isotope Dilution                          |
| MW-401A           | Water  | 10/20/2021 13:45  | 59110-011 | PFAS in Water by Isotope Dilution                          |
| MW-401B           | Water  | 10/20/2021 13:50  | 59110-012 | PFAS in Water by Isotope Dilution                          |
| MW-202D-RE [-002] | Water  | 10/20/2021 9:55   | 59110-013 | PFAS in Water by Isotope Dilution                          |
| MW-217M-RE [-010] | Water  | 10/20/2021 12:50  | 59110-014 | PFAS in Water by Isotope Dilution                          |

## Isotope Dilution

SOP-5317r0 is an isotope dilution method. As such, isotopically labelled analogues and performance standards are used to account for variability that may arise from the extraction process or analytical instrumentation. Compounds labelled as “SUR” are utilized as extracted internal standards, meaning that they are subject to all steps of the extraction process. Compounds labelled as “IS” are used as performance standards and are added to samples following extraction. Isotope dilution analogue concentrations are calculated based upon the response of internal standards. In turn, the concentration of a target analyte is calculated in relation to the recovery of its associated analogue.

Direct analogues are used whenever possible, as they will behave identically to their analogous target analyte during the extraction process. However, not all the reported analytes have direct analogues commercially available. In instances where no direct analogue is available, an analogue with similar structure and chemistry to the target analyte is employed.

Refer to the included “Isotope Dilution Association Table” for the specific analogue (SS) and performance standard (IS) associated with each target compound.



## Isotope Dilution Association Table

| Analyte     | Analogue (SS)    | Performance Standard (IS) |
|-------------|------------------|---------------------------|
| PFTEA       | 13C2-PFTeA SUR   | 13C2-PFOA IS              |
| PFTRIA      | 13C2-PFTeA SUR   | 13C2-PFOA IS              |
| PFDOA       | 13C-PFDoA SUR    | 13C2-PFOA IS              |
| PFUNA       | 13C7-PFUnA SUR   | 13C2-PFOA IS              |
| PFDA        | 13C6-PFDA SUR    | 13C2-PFOA IS              |
| PFNA        | 13C9-PFNA SUR    | 13C2-PFOA IS              |
| PFOA        | 13C8-PFOA SUR    | 13C2-PFOA IS              |
| PFHPA       | 13C4-PFHpA SUR   | 13C2-PFOA IS              |
| PFHXA       | 13C5-PFHxA SUR   | 13C2-PFOA IS              |
| PFPA        | 13C5-PFPeA SUR   | 13C3-PFBA IS              |
| PFBA        | 13C-PFBA SUR     | 13C3-PFBA IS              |
| PFDS        | 13C8-PFOS SUR    | 13C4-PFOS IS              |
| PFNS        | 13C8-PFOS SUR    | 13C4-PFOS IS              |
| PFOS        | 13C8-PFOS SUR    | 13C4-PFOS IS              |
| PFHPS       | 13C8-PFOS SUR    | 13C4-PFOS IS              |
| PFHXS       | 13C3-PFHxS SUR   | 13C4-PFOS IS              |
| PFPES       | 13C3-PFHxS SUR   | 13C4-PFOS IS              |
| PFBS        | 13C3-PFBS SUR    | 13C4-PFOS IS              |
| 82FTS       | 13C2-8:2FTSA SUR | 13C4-PFOS IS              |
| 62FTS       | 13C2-6:2FTSA SUR | 13C4-PFOS IS              |
| 42FTS       | 13C2-4:2FTSA SUR | 13C4-PFOS IS              |
| FOSA        | 13C8-FOSA SUR    | 13C4-PFOS IS              |
| NMEFOSA     | D3-NMeFOSA SUR   | 13C4-PFOS IS              |
| NETFOSAA    | D5-NEtFOSAA SUR  | 13C2-PFOA IS              |
| NMEFOSAA    | D3-NMeFOSAA SUR  | 13C2-PFOA IS              |
| HFPODA      | 13C3-HFPO-DA SUR | 13C2-PFOA IS              |
| ADONA       | 13C4-PFHpA SUR   | 13C2-PFOA IS              |
| 11CLPF3OUDS | 13C8-PFOS SUR    | 13C4-PFOS IS              |
| 9CLPF3ONS   | 13C8-PFOS SUR    | 13C4-PFOS IS              |



124 Heritage Avenue Unit 16  
Portsmouth, NH 03801  
[www.absoluteressourceassociates.com](http://www.absoluteressourceassociates.com)

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-001

**Sample ID:** MW-202S

**Matrix:** Water

**Sampled:** 10/20/21 9:25

**Method Reference:** SOP-5317r0

| Parameter   | Result  | Reporting     |       | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|---------|---------------|-------|-------|--------|---------|-----------|-------|----------|-------|
|   |         | Limit         | DL    |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.9 U   | 1.9           | 0.43  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorotridecanoic acid (PFTRIA)  | 1.9 U   | 1.9           | 0.95  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorododecanoic acid (PFDOA)  | 1.9 U   | 1.9           | 0.33  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroundecanoic acid (PFUNA)  | 1.9 U   | 1.9           | 0.21  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorodecanoic acid (PFDA)   | 1.9 U   | 1.9           | 0.63  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorononanoic acid (PFNA)   | 0.82 J  | 1.9           | 0.53  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroctanoic acid (PFOA)  | 11      | 1.9           | 0.15  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroheptanoic acid (PFHPA)   | 2.5     | 1.9           | 0.071 | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorohexanoic acid (PFHXA)  | 2.4     | 1.9           | 0.30  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoropentanoic acid (PFPA)  | 2.2     | 1.9           | 1.2   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorobutanoic acid (PFBA)   | 14      | 1.9           | 0.14  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorodecane sulfonic acid (PFDS)  | 1.9 U   | 1.9           | 0.13  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorononanesulfonic acid (PFNS)   | 1.9 U   | 1.9           | 0.22  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroctane sulfonic acid (PFOS)   | 6.7     | 1.9           | 0.19  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.9 U   | 1.9           | 0.20  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorohexane sulfonic acid (PFHXS)   | 2.6     | 1.9           | 0.32  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoropentane sulfonic acid (PFPES)  | 0.40 J  | 1.9           | 0.10  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluorobutane sulfonic acid (PFBS)  | 1.8 J   | 1.9           | 0.32  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.9 U   | 1.9           | 0.18  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 1.0 J B | 1.9           | 0.27  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.9 U   | 1.9           | 0.25  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 0.33 J  | 1.9           | 0.14  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 1.9 U   | 1.9           | 0.22  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 1.9 U   | 1.9           | 0.60  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 1.9 U   | 1.9           | 0.53  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.9 U   | 1.9           | 0.18  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.9 U   | 1.9           | 0.17  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.9 U   | 1.9           | 0.18  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.9 U   | 1.9           | 0.13  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |
| <b>Surrogate Recovery</b>   |         | <b>Limits</b> |       |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  | 76      | 50-200        | %     |       | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 12:45 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-001

**Sample ID:** MW-202S

**Matrix:** Water

**Sampled:** 10/20/21 9:25

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting Limit | DL | Dil'n |                | Prep Date | Batch   | Analysis |               |
|-----------------------------|--------|-----------------|----|-------|----------------|-----------|---------|----------|---------------|
|                             |        |                 |    | Units | Factor Analyst |           |         | Date     | Time          |
| <b>Surrogate Recovery</b>   |        |                 |    |       |                |           |         |          |               |
| 13C2-PFDoA SUR              | 78     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C7-PFUuA SUR              | 96     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C6-PFDA SUR               | 98     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C9-PFNA SUR               | 93     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C8-PFOA SUR               | 85     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C4-PFH <sub>p</sub> A SUR | 78     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C5-PFH <sub>x</sub> A SUR | 68     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C5-PFPeA SUR              | 106    | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C-PFBA SUR                | 80     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C8-PFOS SUR               | 81     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C3-PFH <sub>x</sub> S SUR | 82     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C3-PFBS SUR               | 76     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C2-8:2FTSA SUR            | 181    | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C2-6:2FTSA SUR            | 212 *  | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C2-4:2FTSA SUR            | 198    | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C8-FOSA SUR               | 72     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| D3-NMeFOSA SUR              | 33     | 10-100          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| D5-NEtFOSAA SUR             | 100    | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| D3-NMeFOSAA SUR             | 83     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |
| 13C3-HFPO-DA SUR            | 52     | 50-200          |    | %     | 1              | WAS       | 11/2/21 | 14408    | 11/2/21 12:45 |

\* This analogue showed recovery outside of the acceptance criteria.

B = Most likely the result of system contamination.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-002

**Sample ID:** MW-202D

**Matrix:** Water

**Sampled:** 10/20/21 9:55

**Method Reference:** SOP-5317r0

| Parameter   | Result     | Reporting |               | Units | Dil'n  |         | Prep Date | Batch   | Analysis |       |
|---|------------|-----------|---------------|-------|--------|---------|-----------|---------|----------|-------|
|   |            | Limit     | DL            |       | Factor | Analyst |           |         | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.8 U      | 1.8       | 0.41          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorotridecanoic acid (PFTRIA)  | 1.8 U      | 1.8       | 0.90          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorododecanoic acid (PFDOA)  | 1.8 U      | 1.8       | 0.31          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroundecanoic acid (PFUNA)  | 1.8 U      | 1.8       | 0.20          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorodecanoic acid (PFDA)   | 1.8 U      | 1.8       | 0.59          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorononanoic acid (PFNA)   | 0.67 J     | 1.8       | 0.51          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroctanoic acid (PFOA)  | <b>6.5</b> | 1.8       | 0.14          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroheptanoic acid (PFHPA)   | 1.4 J      | 1.8       | 0.068         | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorohexanoic acid (PFHXA)  | <b>2.7</b> | 1.8       | 0.28          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoropentanoic acid (PFPA)  | <b>2.1</b> | 1.8       | 1.1           | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorobutanoic acid (PFBA)   | 1.8 U      | 1.8       | 0.14          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorodecane sulfonic acid (PFDS)  | 1.8 U      | 1.8       | 0.12          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorononanesulfonic acid (PFNS)   | 1.8 U      | 1.8       | 0.20          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroctane sulfonic acid (PFOS)   | <b>4.5</b> | 1.8       | 0.18          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.8 U      | 1.8       | 0.19          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.5 J      | 1.8       | 0.30          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoropentane sulfonic acid (PFPES)  | 0.25 J     | 1.8       | 0.099         | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluorobutane sulfonic acid (PFBS)  | 0.91 J     | 1.8       | 0.30          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.8 U      | 1.8       | 0.17          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | <b>2.3</b> | 1.8       | 0.25          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.8 U      | 1.8       | 0.24          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 1.1 J B    | 1.8       | 0.13          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 1.8 U      | 1.8       | 0.20          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| n-ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)                     | 1.8 U      | 1.8       | 0.57          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 1.8 U      | 1.8       | 0.50          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.8 U      | 1.8       | 0.17          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.8 U      | 1.8       | 0.16          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.8 U      | 1.8       | 0.17          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.8 U      | 1.8       | 0.12          | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:37 |
| <b>Surrogate Recovery</b>   |            |           | <b>Limits</b> |       |        |         |           |         |          |       |
| 13C2-PFTeA SUR  | <b>85</b>  | 50-200    | %             | 1     | ACA    | 11/9/21 | 14427     | 11/9/21 | 17:37    |       |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-002

**Sample ID:** MW-202D

**Matrix:** Water

**Sampled:** 10/20/21 9:55

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting Limit | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|-----------------------------|--------|-----------------|----|-------|--------|---------|-----------|-------|----------|-------|
|                             |        |                 |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b>   |        |                 |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR              | 92     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C7-PFUuA SUR              | 111    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C6-PFDA SUR               | 141    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C9-PFNA SUR               | 115    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C8-PFOA SUR               | 86     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C4-PFH <sub>p</sub> A SUR | 77     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C5-PFH <sub>x</sub> A SUR | 39 *   | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C5-PFPeA SUR              | 4 *    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C-PFBA SUR                | 1 *    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C8-PFOS SUR               | 89     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C3-PFH <sub>x</sub> S SUR | 85     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C3-PFBS SUR               | 32 *   | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C2-8:2FTSA SUR            | 146    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C2-6:2FTSA SUR            | 113    | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C2-4:2FTSA SUR            | 58     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C8-FOSA SUR               | 88     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| D3-NMeFOSA SUR              | 9 *    | 10-100          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| D5-NEtFOSAA SUR             | 96     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| D3-NMeFOSAA SUR             | 70     | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |
| 13C3-HFPO-DA SUR            | 41 *   | 50-200          |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21  | 17:37 |

\* This analog showed recovery outside acceptance criteria.

B = This analyte was detected in the preparation blank.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-003

**Sample ID:** MW-205D

**Matrix:** Water

**Sampled:** 10/20/21 10:50

**Method Reference:** SOP-5317r0

| Parameter   | Result | Reporting     |       | Units | Dil'n  |         | Prep Date | Batch   | Analysis |       |
|---|--------|---------------|-------|-------|--------|---------|-----------|---------|----------|-------|
|   |        | Limit         | DL    |       | Factor | Analyst |           |         | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 2.1 U  | 2.1           | 0.49  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorotridecanoic acid (PFTRIA)  | 2.1 U  | 2.1           | 1.1   | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorododecanoic acid (PFDOA)  | 2.1 U  | 2.1           | 0.38  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroundecanoic acid (PFUNA)  | 2.1 U  | 2.1           | 0.24  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorodecanoic acid (PFDA)   | 2.1 U  | 2.1           | 0.71  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorononanoic acid (PFNA)   | 2.1 U  | 2.1           | 0.61  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroctanoic acid (PFOA)  | 4.6    | 2.1           | 0.17  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroheptanoic acid (PFHPA)   | 0.71 J | 2.1           | 0.081 | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorohexanoic acid (PFHXA)  | 1.5 J  | 2.1           | 0.34  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoropentanoic acid (PFPA)  | 2.1 U  | 2.1           | 1.3   | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorobutanoic acid (PFBA)   | 5.7    | 2.1           | 0.16  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorodecane sulfonic acid (PFDS)  | 2.1 U  | 2.1           | 0.15  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorononanesulfonic acid (PFNS)   | 2.1 U  | 2.1           | 0.24  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroctane sulfonic acid (PFOS)   | 2.6    | 2.1           | 0.22  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroheptane sulfonic acid (PFHPS)  | 2.1 U  | 2.1           | 0.23  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.1 J  | 2.1           | 0.36  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoropentane sulfonic acid (PFPES)  | 0.16 J | 2.1           | 0.12  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluorobutane sulfonic acid (PFBS)  | 0.38 J | 2.1           | 0.36  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 2.1 U  | 2.1           | 0.21  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 0.73 J | 2.1           | 0.30  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 2.1 U  | 2.1           | 0.29  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 2.1 U  | 2.1           | 0.16  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 2.1 U  | 2.1           | 0.25  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 2.1 U  | 2.1           | 0.68  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 2.1 U  | 2.1           | 0.60  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 2.1 U  | 2.1           | 0.21  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 2.1 U  | 2.1           | 0.19  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 2.1 U  | 2.1           | 0.20  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 2.1 U  | 2.1           | 0.15  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 17:53 |
| <b>Surrogate Recovery</b>   |        | <b>Limits</b> |       |       |        |         |           |         |          |       |
| 13C2-PFTeA SUR  | 105    | 50-200        | %     | 1     | ACA    | 11/9/21 | 14427     | 11/9/21 | 17:53    |       |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-003

**Sample ID:** MW-205D

**Matrix:** Water

**Sampled:** 10/20/21 10:50

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting | DL | Units | Dil'n  | Analyst | Prep Date | Batch | Analysis      |
|-----------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|---------------|
|                             |        | Limit     |    |       | Factor |         |           |       | Date Time     |
| <b>Surrogate Recovery</b>   |        |           |    |       |        |         |           |       |               |
| 13C2-PFDoA SUR              | 92     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C7-PFUuA SUR              | 115    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C6-PFDA SUR               | 98     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C9-PFNA SUR               | 91     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C8-PFOA SUR               | 84     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C4-PFH <sub>p</sub> A SUR | 75     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C5-PFH <sub>x</sub> A SUR | 60     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C5-PFPeA SUR              | 102    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C-PFBA SUR                | 77     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C8-PFOS SUR               | 94     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C3-PFH <sub>x</sub> S SUR | 90     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C3-PFBS SUR               | 91     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C2-8:2FTSA SUR            | 107    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C2-6:2FTSA SUR            | 102    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C2-4:2FTSA SUR            | 79     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C8-FOSA SUR               | 45 *   | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| D3-NMeFOSA SUR              | 4 *    | 10-100    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| D5-NEtFOSAA SUR             | 94     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| D3-NMeFOSAA SUR             | 78     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |
| 13C3-HFPO-DA SUR            | 69     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 17:53 |

\* This analog showed recovery outside acceptance criteria.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-004

**Sample ID:** MW-206D

**Matrix:** Water

**Sampled:** 10/20/21 11:55

**Method Reference:** SOP-5317r0

| Parameter   | Result     | Reporting     |        | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|------------|---------------|--------|-------|--------|---------|-----------|-------|----------|-------|
|   |            | Limit         | DL     |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 2.0 U      | 2.0           | 0.46   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorotridecanoic acid (PFTRIA)  | 2.0 U      | 2.0           | 1.0    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorododecanoic acid (PFDOA)  | 2.0 U      | 2.0           | 0.35   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroundecanoic acid (PFUNA)  | 2.0 U      | 2.0           | 0.22   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorodecanoic acid (PFDA)   | 2.0 U      | 2.0           | 0.67   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorononanoic acid (PFNA)   | 2.0 U      | 2.0           | 0.57   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroctanoic acid (PFOA)  | <b>5.9</b> | 2.0           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroheptanoic acid (PFHPA)   | 1.1 J      | 2.0           | 0.076  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorohexanoic acid (PFHXA)  | <b>2.1</b> | 2.0           | 0.32   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoropentanoic acid (PFPA)  | 2.0 U      | 2.0           | 1.2    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorobutanoic acid (PFBA)   | <b>6.2</b> | 2.0           | 0.15   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorodecane sulfonic acid (PFDS)  | 2.0 U      | 2.0           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorononanesulfonic acid (PFNS)   | 2.0 U      | 2.0           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroctane sulfonic acid (PFOS)   | <b>3.7</b> | 2.0           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroheptane sulfonic acid (PFHPS)  | 2.0 U      | 2.0           | 0.21   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.0 J      | 2.0           | 0.34   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoropentane sulfonic acid (PFPES)  | 0.16 J     | 2.0           | 0.11   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluorobutane sulfonic acid (PFBS)  | 0.46 J     | 2.0           | 0.34   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 2.0 U      | 2.0           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 1.1 J B    | 2.0           | 0.29   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 2.0 U      | 2.0           | 0.27   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 0.18 J     | 2.0           | 0.15   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 2.0 U      | 2.0           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 2.0 U      | 2.0           | 0.64   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 2.0 U      | 2.0           | 0.56   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 2.0 U      | 2.0           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 2.0 U      | 2.0           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 2.0 U      | 2.0           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 2.0 U      | 2.0           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |
| <b>Surrogate Recovery</b>   |            | <b>Limits</b> |        |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  |            | <b>110</b>    | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:33 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-004

**Sample ID:** MW-206D

**Matrix:** Water

**Sampled:** 10/20/21 11:55

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting | DL | Units | Dil'n  | Analyst | Prep Date | Batch | Analysis      |
|-----------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|---------------|
|                             |        | Limit     |    |       | Factor |         |           |       | Date Time     |
| <b>Surrogate Recovery</b>   |        |           |    |       |        |         |           |       |               |
| 13C2-PFDoA SUR              | 100    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C7-PFUuA SUR              | 107    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C6-PFDA SUR               | 108    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C9-PFNA SUR               | 92     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C8-PFOA SUR               | 85     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C4-PFH <sub>p</sub> A SUR | 73     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C5-PFH <sub>x</sub> A SUR | 62     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C5-PFPeA SUR              | 100    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C-PFBA SUR                | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C8-PFOS SUR               | 85     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C3-PFH <sub>x</sub> S SUR | 82     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C3-PFBS SUR               | 76     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C2-8:2FTSA SUR            | 226 *  | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C2-6:2FTSA SUR            | 204 *  | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C2-4:2FTSA SUR            | 150    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C8-FOSA SUR               | 65     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| D3-NMeFOSA SUR              | 23     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| D5-NEtFOSAA SUR             | 113    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| D3-NMeFOSAA SUR             | 91     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |
| 13C3-HFPO-DA SUR            | 46 *   | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:33 |

\* This analogue showed recovery outside of the acceptance criteria.

Note: Sample was poured off due to the presence of sediment in the original sample container.

B = Most likely the result of system contamination.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-005

**Sample ID:** MW-215M

**Matrix:** Water

**Sampled:** 10/20/21 11:40

**Method Reference:** SOP-5317r0

| Parameter   | Result    | Reporting     |       | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|-----------|---------------|-------|-------|--------|---------|-----------|-------|----------|-------|
|   |           | Limit         | DL    |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.7 U     | 1.7           | 0.39  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorotridecanoic acid (PFTRIA)  | 1.7 U M   | 1.7           | 0.87  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorododecanoic acid (PFDOA)  | 1.7 U     | 1.7           | 0.30  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroundecanoic acid (PFUNA)  | 1.7 U     | 1.7           | 0.19  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorodecanoic acid (PFDA)   | 1.7 U     | 1.7           | 0.57  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorononanoic acid (PFNA)   | 1.7 U     | 1.7           | 0.49  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroctanoic acid (PFOA)  | 1.7 U     | 1.7           | 0.14  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroheptanoic acid (PFHPA)   | 0.096 J   | 1.7           | 0.065 | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorohexanoic acid (PFHXA)  | 1.7 U     | 1.7           | 0.27  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoropentanoic acid (PFPA)  | 1.7 U     | 1.7           | 1.1   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorobutanoic acid (PFBA)   | 0.43 J    | 1.7           | 0.13  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorodecane sulfonic acid (PFDS)  | 1.7 U     | 1.7           | 0.12  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorononanesulfonic acid (PFNS)   | 1.7 U     | 1.7           | 0.20  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroctane sulfonic acid (PFOS)   | 1.7 U     | 1.7           | 0.17  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroheptane sulfonic acid (PFHPS)  | 0.20 J    | 1.7           | 0.18  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorohexane sulfonic acid (PFHXS)   | 0.49 J    | 1.7           | 0.29  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoropentane sulfonic acid (PFPES)  | 0.12 J    | 1.7           | 0.096 | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluorobutane sulfonic acid (PFBS)  | 1.7 U     | 1.7           | 0.29  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.7 U     | 1.7           | 0.17  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 0.49 J B  | 1.7           | 0.24  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.7 U     | 1.7           | 0.23  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 1.7 U     | 1.7           | 0.13  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 1.7 U     | 1.7           | 0.20  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 1.7 U     | 1.7           | 0.55  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 1.7 U     | 1.7           | 0.48  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.7 U     | 1.7           | 0.17  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.7 U     | 1.7           | 0.16  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.7 U     | 1.7           | 0.16  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.7 U     | 1.7           | 0.12  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |
| <b>Surrogate Recovery</b>   |           | <b>Limits</b> |       |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  | <b>69</b> | 50-200        | %     |       | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:49 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-005

**Sample ID:** MW-215M

**Matrix:** Water

**Sampled:** 10/20/21 11:40

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting | DL | Units | Dil'n  | Analyst | Prep Date | Batch | Analysis      |
|-----------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|---------------|
|                             |        | Limit     |    |       | Factor |         |           |       | Date Time     |
| <b>Surrogate Recovery</b>   |        |           |    |       |        |         |           |       |               |
| 13C2-PFDoA SUR              | 70     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C7-PFUuA SUR              | 90     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C6-PFDA SUR               | 96     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C9-PFNA SUR               | 94     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C8-PFOA SUR               | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C4-PFH <sub>p</sub> A SUR | 72     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C5-PFH <sub>x</sub> A SUR | 67     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C5-PFPeA SUR              | 118    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C-PFBA SUR                | 84     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C8-PFOS SUR               | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C3-PFH <sub>x</sub> S SUR | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C3-PFBS SUR               | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C2-8:2FTSA SUR            | 185    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C2-6:2FTSA SUR            | 184    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C2-4:2FTSA SUR            | 179    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C8-FOSA SUR               | 69     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| D3-NMeFOSA SUR              | 24     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| D5-NEtFOSAA SUR             | 102    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| D3-NMeFOSAA SUR             | 80     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |
| 13C3-HFPO-DA SUR            | 50     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 13:49 |

*M = The percent recovery in the matrix spike was outside acceptance criteria.*

*B = Most likely the result of system contamination.*

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-008

**Sample ID:** MW-215 DUP

**Matrix:** Water

**Sampled:** 10/20/21 12:40

**Method Reference:** SOP-5317r0

| Parameter   | Result   | Reporting     |        | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|----------|---------------|--------|-------|--------|---------|-----------|-------|----------|-------|
|   |          | Limit         | DL     |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 2.0 U    | 2.0           | 0.46   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorotridecanoic acid (PFTRIA)  | 2.0 U    | 2.0           | 1.0    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorododecanoic acid (PFDOA)  | 2.0 U    | 2.0           | 0.36   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroundecanoic acid (PFUNA)  | 2.0 U    | 2.0           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorodecanoic acid (PFDA)   | 2.0 U    | 2.0           | 0.68   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorononanoic acid (PFNA)   | 2.0 U    | 2.0           | 0.58   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroctanoic acid (PFOA)  | 2.0 U    | 2.0           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroheptanoic acid (PFHPA)   | 2.0 U    | 2.0           | 0.077  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorohexanoic acid (PFHXA)  | 2.0 U    | 2.0           | 0.32   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoropentanoic acid (PFPA)  | 2.0 U    | 2.0           | 1.3    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorobutanoic acid (PFBA)   | 0.45 J   | 2.0           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorodecane sulfonic acid (PFDS)  | 2.0 U    | 2.0           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorononanesulfonic acid (PFNS)   | 2.0 U    | 2.0           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroctane sulfonic acid (PFOS)   | 2.0 U    | 2.0           | 0.21   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroheptane sulfonic acid (PFHPS)  | 2.0 U    | 2.0           | 0.22   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorohexane sulfonic acid (PFHXS)   | 2.0 U    | 2.0           | 0.35   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoropentane sulfonic acid (PFPES)  | 0.13 J   | 2.0           | 0.11   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluorobutane sulfonic acid (PFBS)  | 2.0 U    | 2.0           | 0.34   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 2.0 U    | 2.0           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 0.66 J B | 2.0           | 0.29   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 0.34 J   | 2.0           | 0.27   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 2.0 U    | 2.0           | 0.15   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 2.0 U    | 2.0           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| n-ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)                     | 2.0 U    | 2.0           | 0.65   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 2.0 U    | 2.0           | 0.57   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 2.0 U    | 2.0           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 2.0 U    | 2.0           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 2.0 U    | 2.0           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 2.0 U    | 2.0           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |
| <b>Surrogate Recovery</b>   |          | <b>Limits</b> |        |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  |          | 44 *          | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:37 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-008

**Sample ID:** MW-215 DUP

**Matrix:** Water

**Sampled:** 10/20/21 12:40

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  | Analyst | Prep Date | Batch | Analysis      |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|---------------|
|                           |        | Limit     |    |       | Factor |         |           |       | Date Time     |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |               |
| 13C2-PFDoA SUR            | 67     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C7-PFUuA SUR            | 89     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C6-PFDA SUR             | 106    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C9-PFNA SUR             | 103    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C8-PFOA SUR             | 91     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C4-PFHpA SUR            | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C5-PFHxA SUR            | 76     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C5-PFPeA SUR            | 113    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C-PFBA SUR              | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C8-PFOS SUR             | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C3-PFHxS SUR            | 87     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C3-PFBS SUR             | 82     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C2-8:2FTSA SUR          | 157    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C2-6:2FTSA SUR          | 173    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C2-4:2FTSA SUR          | 174    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C8-FOSA SUR             | 72     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| D3-NMeFOSA SUR            | 21     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| D5-NEtFOSAA SUR           | 105    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| D3-NMeFOSAA SUR           | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |
| 13C3-HFPO-DA SUR          | 62     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21 14:37 |

\* This analogue showed recovery outside of the acceptance criteria.

Note: Sample was poured off due to the presence of sediment in the original sample container.

B = Most likely the result of system contamination.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-009

**Sample ID:** MW-216S

**Matrix:** Water

**Sampled:** 10/20/21 13:30

**Method Reference:** SOP-5317r0

| Parameter   | Result   | Reporting     |        | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |  |
|---|----------|---------------|--------|-------|--------|---------|-----------|-------|----------|-------|--|
|   |          | Limit         | DL     |       | Factor | Analyst |           |       | Date     | Time  |  |
| perfluorotetradecanoic acid (PFTEA)   | 1.8 U    | 1.8           | 0.41   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorotridecanoic acid (PFTRIA)  | 1.8 U    | 1.8           | 0.90   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorododecanoic acid (PFDOA)  | 1.8 U    | 1.8           | 0.32   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroundecanoic acid (PFUNA)  | 1.8 U    | 1.8           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorodecanoic acid (PFDA)   | 1.8 U    | 1.8           | 0.60   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorononanoic acid (PFNA)   | 1.8 U    | 1.8           | 0.51   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroctanoic acid (PFOA)  | 4.2      | 1.8           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroheptanoic acid (PFHPA)   | 0.65 J   | 1.8           | 0.068  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorohexanoic acid (PFHXA)  | 0.75 J   | 1.8           | 0.28   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoropentanoic acid (PFPA)  | 1.8 U    | 1.8           | 1.1    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorobutanoic acid (PFBA)   | 3.4      | 1.8           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorodecane sulfonic acid (PFDS)  | 1.8 U    | 1.8           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorononanesulfonic acid (PFNS)   | 1.8 U    | 1.8           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroctane sulfonic acid (PFOS)   | 3.0      | 1.8           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.8 U    | 1.8           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorohexane sulfonic acid (PFHXS)   | 0.92 J   | 1.8           | 0.30   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoropentane sulfonic acid (PFPES)  | 0.14 J   | 1.8           | 0.100  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluorobutane sulfonic acid (PFBS)  | 0.31 J   | 1.8           | 0.30   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.8 U    | 1.8           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 0.67 J B | 1.8           | 0.25   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.8 U    | 1.8           | 0.24   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 0.23 J   | 1.8           | 0.13   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 1.8 U    | 1.8           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 1.8 U    | 1.8           | 0.57   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 1.8 U    | 1.8           | 0.50   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.8 U    | 1.8           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.8 U    | 1.8           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.8 U    | 1.8           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.8 U    | 1.8           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |
| <b>Surrogate Recovery</b>   |          | <b>Limits</b> |        |       |        |         |           |       |          |       |  |
| 13C2-PFTeA SUR  |          | 73            | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |  |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-009

**Sample ID:** MW-216S

**Matrix:** Water

**Sampled:** 10/20/21 13:30

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|----------|-------|
|                           |        | Limit     |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR            | 76     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C7-PFUuA SUR            | 90     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C6-PFDA SUR             | 94     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C9-PFNA SUR             | 95     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C8-PFOA SUR             | 85     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C4-PFHpA SUR            | 80     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C5-PFHxA SUR            | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C5-PFPeA SUR            | 100    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C-PFBA SUR              | 79     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C8-PFOS SUR             | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C3-PFHxS SUR            | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C3-PFBS SUR             | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C2-8:2FTSA SUR          | 108    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C2-6:2FTSA SUR          | 133    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C2-4:2FTSA SUR          | 116    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C8-FOSA SUR             | 60     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| D3-NMeFOSA SUR            | 10     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| D5-NEtFOSAA SUR           | 98     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| D3-NMeFOSAA SUR           | 82     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |
| 13C3-HFPO-DA SUR          | 54     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 14:52 |

*B = Most likely the result of system contamination.*

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-010

**Sample ID:** MW-217M

**Matrix:** Water

**Sampled:** 10/20/21 12:50

**Method Reference:** SOP-5317r0

| Parameter   | Result   | Reporting     |       | Units | Dil'n  |         | Prep Date | Batch   | Analysis |       |
|---|----------|---------------|-------|-------|--------|---------|-----------|---------|----------|-------|
|   |          | Limit         | DL    |       | Factor | Analyst |           |         | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.8 U    | 1.8           | 0.42  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorotridecanoic acid (PFTRIA)  | 1.8 U    | 1.8           | 0.92  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorododecanoic acid (PFDOA)  | 1.8 U    | 1.8           | 0.32  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroundecanoic acid (PFUNA)  | 1.8 U    | 1.8           | 0.20  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorodecanoic acid (PFDA)   | 1.8 U    | 1.8           | 0.61  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorononanoic acid (PFNA)   | 1.8 U    | 1.8           | 0.52  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroctanoic acid (PFOA)  | 4.3      | 1.8           | 0.15  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroheptanoic acid (PFHPA)   | 0.97 J   | 1.8           | 0.069 | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorohexanoic acid (PFHXA)  | 1.9      | 1.8           | 0.29  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoropentanoic acid (PFPA)  | 1.8 U    | 1.8           | 1.1   | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorobutanoic acid (PFBA)   | 2.7      | 1.8           | 0.14  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorodecane sulfonic acid (PFDS)  | 1.8 U    | 1.8           | 0.13  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorononanesulfonic acid (PFNS)   | 1.8 U    | 1.8           | 0.21  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroctane sulfonic acid (PFOS)   | 2.9      | 1.8           | 0.19  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.8 U    | 1.8           | 0.19  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.6 J    | 1.8           | 0.31  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoropentane sulfonic acid (PFPES)  | 0.28 J   | 1.8           | 0.10  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluorobutane sulfonic acid (PFBS)  | 0.63 J   | 1.8           | 0.31  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.0 J    | 1.8           | 0.18  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 8.6      | 1.8           | 0.26  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.8 U    | 1.8           | 0.24  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 0.20 J B | 1.8           | 0.14  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 1.8 U    | 1.8           | 0.21  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 1.8 U    | 1.8           | 0.58  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 1.8 U    | 1.8           | 0.51  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.8 U    | 1.8           | 0.18  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.8 U    | 1.8           | 0.17  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.8 U    | 1.8           | 0.17  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.8 U    | 1.8           | 0.12  | ng/L  | 1      | ACA     | 11/9/21   | 14427   | 11/9/21  | 18:09 |
| <b>Surrogate Recovery</b>   |          | <b>Limits</b> |       |       |        |         |           |         |          |       |
| 13C2-PFTeA SUR  | 86       | 50-200        | %     | 1     | ACA    | 11/9/21 | 14427     | 11/9/21 | 18:09    |       |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-010

**Sample ID:** MW-217M

**Matrix:** Water

**Sampled:** 10/20/21 12:50

**Method Reference:** SOP-5317r0

| Parameter                   | Result | Reporting | DL | Units | Dil'n  | Analyst | Prep Date | Batch | Analysis      |
|-----------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|---------------|
|                             |        | Limit     |    |       | Factor |         |           |       | Date Time     |
| <b>Surrogate Recovery</b>   |        |           |    |       |        |         |           |       |               |
| 13C2-PFDoA SUR              | 88     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C7-PFUuA SUR              | 107    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C6-PFDA SUR               | 104    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C9-PFNA SUR               | 99     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C8-PFOA SUR               | 92     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C4-PFH <sub>p</sub> A SUR | 83     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C5-PFH <sub>x</sub> A SUR | 69     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C5-PFPeA SUR              | 47 *   | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C-PFBA SUR                | 4 *    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C8-PFOS SUR               | 91     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C3-PFH <sub>x</sub> S SUR | 84     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C3-PFBS SUR               | 80     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C2-8:2FTSA SUR            | 114    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C2-6:2FTSA SUR            | 105    | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C2-4:2FTSA SUR            | 81     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C8-FOSA SUR               | 70     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| D3-NMeFOSA SUR              | 6 *    | 10-100    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| D5-NEtFOSAA SUR             | 90     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| D3-NMeFOSAA SUR             | 66     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |
| 13C3-HFPO-DA SUR            | 73     | 50-200    |    | %     | 1      | ACA     | 11/9/21   | 14427 | 11/9/21 18:09 |

\* This analog showed recovery outside acceptance criteria.

B = This analyte was detected in the preparation blank.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-011

**Sample ID:** MW-401A

**Matrix:** Water

**Sampled:** 10/20/21 13:45

**Method Reference:** SOP-5317r0

| Parameter   | Result   | Reporting     |        | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|----------|---------------|--------|-------|--------|---------|-----------|-------|----------|-------|
|   |          | Limit         | DL     |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.7 U    | 1.7           | 0.39   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorotridecanoic acid (PFTRIA)  | 1.7 U    | 1.7           | 0.87   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorododecanoic acid (PFDOA)  | 1.7 U    | 1.7           | 0.30   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroundecanoic acid (PFUNA)  | 1.7 U    | 1.7           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorodecanoic acid (PFDA)   | 1.7 U    | 1.7           | 0.58   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorononanoic acid (PFNA)   | 1.7 U    | 1.7           | 0.49   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroctanoic acid (PFOA)  | 1.7 U    | 1.7           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroheptanoic acid (PFHPA)   | 1.7 U    | 1.7           | 0.065  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorohexanoic acid (PFHXA)  | 1.7 U    | 1.7           | 0.27   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoropentanoic acid (PFPA)  | 1.7 U    | 1.7           | 1.1    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorobutanoic acid (PFBA)   | 1.7 U    | 1.7           | 0.13   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorodecane sulfonic acid (PFDS)  | 1.7 U    | 1.7           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorononanesulfonic acid (PFNS)   | 1.7 U    | 1.7           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroctane sulfonic acid (PFOS)   | 1.7 U    | 1.7           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.7 U    | 1.7           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.7 U    | 1.7           | 0.29   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoropentane sulfonic acid (PFPES)  | 1.7 U    | 1.7           | 0.096  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluorobutane sulfonic acid (PFBS)  | 1.7 U    | 1.7           | 0.29   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.7 U    | 1.7           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 0.52 J B | 1.7           | 0.25   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.7 U    | 1.7           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 1.7 U    | 1.7           | 0.13   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 1.7 U    | 1.7           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| n-ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)                     | 1.7 U    | 1.7           | 0.55   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 1.7 U    | 1.7           | 0.48   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.7 U    | 1.7           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.7 U    | 1.7           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.7 U    | 1.7           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.7 U    | 1.7           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| <b>Surrogate Recovery</b>   |          | <b>Limits</b> |        |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  |          | 76            | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-011

**Sample ID:** MW-401A

**Matrix:** Water

**Sampled:** 10/20/21 13:45

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|----------|-------|
|                           |        | Limit     |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR            | 77     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C7-PFUuA SUR            | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C6-PFDA SUR             | 99     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C9-PFNA SUR             | 94     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C8-PFOA SUR             | 87     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C4-PFHpA SUR            | 82     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C5-PFHxA SUR            | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C5-PFPeA SUR            | 94     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C-PFBA SUR              | 85     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C8-PFOS SUR             | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C3-PFHxS SUR            | 85     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C3-PFBS SUR             | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C2-8:2FTSA SUR          | 96     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C2-6:2FTSA SUR          | 104    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C2-4:2FTSA SUR          | 79     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C8-FOSA SUR             | 71     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| D3-NMeFOSA SUR            | 17     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| D5-NEtFOSAA SUR           | 94     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| D3-NMeFOSAA SUR           | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |
| 13C3-HFPO-DA SUR          | 62     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:24 |

B = Most likely the result of system contamination.

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-012

**Sample ID:** MW-401B

**Matrix:** Water

**Sampled:** 10/20/21 13:50

**Method Reference:** SOP-5317r0

| Parameter   | Result  | Reporting     |        | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|---------|---------------|--------|-------|--------|---------|-----------|-------|----------|-------|
|   |         | Limit         | DL     |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 1.7 U   | 1.7           | 0.40   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorotridecanoic acid (PFTRIA)  | 1.7 U   | 1.7           | 0.88   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorododecanoic acid (PFDOA)  | 1.7 U   | 1.7           | 0.31   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroundecanoic acid (PFUNA)  | 1.7 U   | 1.7           | 0.19   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorodecanoic acid (PFDA)   | 1.7 U   | 1.7           | 0.58   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorononanoic acid (PFNA)   | 1.7 U   | 1.7           | 0.49   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroctanoic acid (PFOA)  | 1.7 U   | 1.7           | 0.14   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroheptanoic acid (PFHPA)   | 1.7 U   | 1.7           | 0.066  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorohexanoic acid (PFHXA)  | 1.7 U   | 1.7           | 0.28   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoropentanoic acid (PFPA)  | 1.7 U   | 1.7           | 1.1    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorobutanoic acid (PFBA)   | 1.7 U   | 1.7           | 0.13   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorodecane sulfonic acid (PFDS)  | 1.7 U   | 1.7           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorononanesulfonic acid (PFNS)   | 1.7 U   | 1.7           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroctane sulfonic acid (PFOS)   | 1.7 U   | 1.7           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroheptane sulfonic acid (PFHPS)  | 1.7 U   | 1.7           | 0.18   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorohexane sulfonic acid (PFHXS)   | 1.7 U   | 1.7           | 0.30   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoropentane sulfonic acid (PFPES)  | 1.7 U   | 1.7           | 0.097  | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluorobutane sulfonic acid (PFBS)  | 1.7 U   | 1.7           | 0.29   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 1.7 U   | 1.7           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 1.2 J B | 1.7           | 0.25   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 1.7 U   | 1.7           | 0.23   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 1.7 U   | 1.7           | 0.13   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 1.7 U   | 1.7           | 0.20   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| n-ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)                     | 1.7 U   | 1.7           | 0.56   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 1.7 U   | 1.7           | 0.49   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 1.7 U   | 1.7           | 0.17   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 1.7 U   | 1.7           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 1.7 U   | 1.7           | 0.16   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 1.7 U   | 1.7           | 0.12   | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| <b>Surrogate Recovery</b>   |         | <b>Limits</b> |        |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  |         | 98            | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-012

**Sample ID:** MW-401B

**Matrix:** Water

**Sampled:** 10/20/21 13:50

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|----------|-------|
|                           |        | Limit     |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR            | 95     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C7-PFUuA SUR            | 100    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C6-PFDA SUR             | 105    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C9-PFNA SUR             | 99     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C8-PFOA SUR             | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C4-PFHpA SUR            | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C5-PFHxA SUR            | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C5-PFPeA SUR            | 97     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C-PFBA SUR              | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C8-PFOS SUR             | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C3-PFHxS SUR            | 84     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C3-PFBS SUR             | 79     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C2-8:2FTSA SUR          | 140    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C2-6:2FTSA SUR          | 115    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C2-4:2FTSA SUR          | 78     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C8-FOSA SUR             | 61     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| D3-NMeFOSA SUR            | 17     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| D5-NEtFOSAA SUR           | 106    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| D3-NMeFOSAA SUR           | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |
| 13C3-HFPO-DA SUR          | 65     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:40 |

*B = Most likely the result of system contamination.*

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-013

**Sample ID:** MW-202D-RE [-002]

**Matrix:** Water

**Sampled:** 10/20/21 9:55

**Method Reference:** SOP-5317r0

| Parameter   | Result | Reporting Limit | DL  | Units | Dil'n         |         | Prep Date | Batch | Analysis |       |
|---|--------|-----------------|-----|-------|---------------|---------|-----------|-------|----------|-------|
|   |        |                 |     |       | Factor        | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 100 U  | 100             | 23  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorotridecanoic acid (PFTRIA)  | 100 U  | 100             | 51  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorododecanoic acid (PFDOA)  | 100 U  | 100             | 18  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroundecanoic acid (PFUNA)  | 100 U  | 100             | 11  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorodecanoic acid (PFDA)   | 100 U  | 100             | 34  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorononanoic acid (PFNA)   | 100 U  | 100             | 28  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroctanoic acid (PFOA)  | 12 J   | 100             | 8.0 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroheptanoic acid (PFHPA)   | 8.0 J  | 100             | 3.8 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorohexanoic acid (PFHXA)  | 100 U  | 100             | 16  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoropentanoic acid (PFPA)  | 100 U  | 100             | 62  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorobutanoic acid (PFBA)   | 9.3 J  | 100             | 7.7 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorodecane sulfonic acid (PFDS)  | 100 U  | 100             | 7.0 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorononanesulfonic acid (PFNS)   | 100 U  | 100             | 12  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroctane sulfonic acid (PFOS)   | 100 U  | 100             | 10  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroheptane sulfonic acid (PFHPS)  | 100 U  | 100             | 11  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorohexane sulfonic acid (PFHXS)   | 100 U  | 100             | 17  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoropentane sulfonic acid (PFPES)  | 100 U  | 100             | 5.6 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluorobutane sulfonic acid (PFBS)  | 100 U  | 100             | 17  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 53 J   | 100             | 9.7 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 320 B  | 100             | 14  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 100 U  | 100             | 13  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 100 U  | 100             | 7.6 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 100 U  | 100             | 12  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 100 U  | 100             | 32  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 100 U  | 100             | 28  | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 100 U  | 100             | 9.8 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 100 U  | 100             | 9.2 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 100 U  | 100             | 9.5 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 100 U  | 100             | 6.8 | ng/L  | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| <b>Surrogate Recovery</b>   |        |                 |     |       | <b>Limits</b> |         |           |       |          |       |
| 13C2-PFTeA SUR  | 102    | 50-200          |     | %     | 1             | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-013

**Sample ID:** MW-202D-RE [-002]

**Matrix:** Water

**Sampled:** 10/20/21 9:55

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|----------|-------|
|                           |        | Limit     |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR            | 101    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C7-PFUuA SUR            | 106    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C6-PFDA SUR             | 104    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C9-PFNA SUR             | 108    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C8-PFOA SUR             | 89     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C4-PFHpA SUR            | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C5-PFHxA SUR            | 80     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C5-PFPeA SUR            | 86     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C-PFBA SUR              | 71     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C8-PFOS SUR             | 84     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C3-PFHxS SUR            | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C3-PFBS SUR             | 77     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C2-8:2FTSA SUR          | 138    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C2-6:2FTSA SUR          | 125    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C2-4:2FTSA SUR          | 137    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C8-FOSA SUR             | 59     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| D3-NMeFOSA SUR            | 16     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| D5-NEtFOSAA SUR           | 115    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| D3-NMeFOSAA SUR           | 80     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |
| 13C3-HFPO-DA SUR          | 63     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 13:01 |

*B = Most likely the result of system contamination.*

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-014

**Sample ID:** MW-217M-RE [-010]

**Matrix:** Water

**Sampled:** 10/20/21 12:50

**Method Reference:** SOP-5317r0

| Parameter   | Result | Reporting Limit | DL     | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---|--------|-----------------|--------|-------|--------|---------|-----------|-------|----------|-------|
|   |        |                 |        |       | Factor | Analyst |           |       | Date     | Time  |
| perfluorotetradecanoic acid (PFTEA)   | 100 U  | 100             | 23     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorotridecanoic acid (PFTRIA)  | 100 U  | 100             | 51     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorododecanoic acid (PFDOA)  | 100 U  | 100             | 18     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroundecanoic acid (PFUNA)  | 100 U  | 100             | 11     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorodecanoic acid (PFDA)   | 100 U  | 100             | 34     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorononanoic acid (PFNA)   | 100 U  | 100             | 28     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroctanoic acid (PFOA)  | 100 U  | 100             | 8.0    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroheptanoic acid (PFHPA)   | 4.2 J  | 100             | 3.8    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorohexanoic acid (PFHXA)  | 100 U  | 100             | 16     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoropentanoic acid (PFPA)  | 100 U  | 100             | 62     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorobutanoic acid (PFBA)   | 100 U  | 100             | 7.7    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorodecane sulfonic acid (PFDS)  | 100 U  | 100             | 7.0    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorononanesulfonic acid (PFNS)   | 100 U  | 100             | 12     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroctane sulfonic acid (PFOS)   | 100 U  | 100             | 10     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroheptane sulfonic acid (PFHPS)  | 100 U  | 100             | 11     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorohexane sulfonic acid (PFHXS)   | 100 U  | 100             | 17     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoropentane sulfonic acid (PFPES)  | 100 U  | 100             | 5.6    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluorobutane sulfonic acid (PFBS)  | 100 U  | 100             | 17     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 18 J   | 100             | 9.7    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 110 B  | 100             | 14     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 100 U  | 100             | 13     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 100 U  | 100             | 7.6    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| n-methyl perfluorooctane sulfonamide (NMEFOSA)                                | 100 U  | 100             | 12     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| n-ethyl perfluorooctanesulfonamido acetic acid (NETFOSAA)                     | 100 U  | 100             | 32     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| n-methylperfluorooctane sulfonamido acetic acid (NMEFOSAA)                    | 100 U  | 100             | 28     | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 100 U  | 100             | 9.8    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 100 U  | 100             | 9.2    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 100 U  | 100             | 9.5    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 100 U  | 100             | 6.8    | ng/L  | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| <b>Surrogate Recovery</b>   |        | <b>Limits</b>   |        |       |        |         |           |       |          |       |
| 13C2-PFTeA SUR  |        | 94              | 50-200 | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

**Project ID:** 60 Olympia-FDDA 2491

**Job ID:** 59110

**Sample#:** 59110-014

**Sample ID:** MW-217M-RE [-010]

**Matrix:** Water

**Sampled:** 10/20/21 12:50

**Method Reference:** SOP-5317r0

| Parameter                 | Result | Reporting | DL | Units | Dil'n  |         | Prep Date | Batch | Analysis |       |
|---------------------------|--------|-----------|----|-------|--------|---------|-----------|-------|----------|-------|
|                           |        | Limit     |    |       | Factor | Analyst |           |       | Date     | Time  |
| <b>Surrogate Recovery</b> |        |           |    |       |        |         |           |       |          |       |
| 13C2-PFDoA SUR            | 89     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C7-PFUuA SUR            | 102    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C6-PFDA SUR             | 97     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C9-PFNA SUR             | 97     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C8-PFOA SUR             | 91     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C4-PFHpA SUR            | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C5-PFHxA SUR            | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C5-PFPeA SUR            | 91     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C-PFBA SUR              | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C8-PFOS SUR             | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C3-PFHxS SUR            | 88     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C3-PFBS SUR             | 83     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C2-8:2FTSA SUR          | 95     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C2-6:2FTSA SUR          | 103    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C2-4:2FTSA SUR          | 81     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C8-FOSA SUR             | 72     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| D3-NMeFOSA SUR            | 19     | 10-100    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| D5-NEtFOSAA SUR           | 105    | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| D3-NMeFOSAA SUR           | 87     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |
| 13C3-HFPO-DA SUR          | 73     | 50-200    |    | %     | 1      | WAS     | 11/2/21   | 14408 | 11/2/21  | 15:08 |

*B = Most likely the result of system contamination.*

U = This compound was analyzed for, but not detected above the associated method detection limit.

J = The analytical result was below the instrument calibration range, but above the method detection limit. The reported concentration is an estimate.

# Quality Control Report



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## Case Narrative

Lab # 59110

### **Sample Receiving and Chain of Custody Discrepancies**

Samples were received in acceptable condition, between 0 and 6 degrees C, on ice, and in accordance with sample handling, preservation and integrity guidelines.

### **Calibration**

No exceptions noted.

PFAS: No exceptions noted regarding the Internal Standards or Calibration/Calibration Verifications associated with sample analysis.

### **Method Blank**

PFAS: The compound 6:2 fluorotelomer sulfonic acid (62FTS) was detected below the reporting limit in BLK14408 at an estimated concentration of 0.90 ng/L. This is likely a result of laboratory contamination. All associated samples with concentrations of this compound  $\geq$  MDL have been qualified accordingly.

PFAS: The compounds perfluorooctane sulfonamide (PFOSA) (FOSA) and n-methyl perfluorooctane sulfonamide (NMeFOSA) were detected in BLK14427. This is likely a result of poor recovery of the associated analogues (SS13C8-FOSA and SSD3-NMeFOSA). All associated samples with concentrations of these compounds  $\geq$  MDL have been qualified accordingly.

### **Surrogate Recoveries**

PFAS: Several analogs were outside acceptance criteria in samples 59110-001, -002, -003, -004, -008, and 010. The 13C2-PFTeA SUR, 13C8-FOSA SUR, 13C3-HFPO-DA SUR, and D3-NMeFOSA SUR deficiencies were most likely caused by complications that arose doing the extract concentration process. The 13C2-6:2FTSA SUR, 13C2-8:2FTSA SUR, 13C5-PFHxA SUR, 13C5-PFPeA SUR, 13C-PFBA SUR, and 13C3-PFBS SUR deficiencies were likely caused by matrix interference. Please refer to the attached table for analytes potentially impacted.

### **Laboratory Control Sample Results**

No exceptions noted.

### **Matrix Spike/Matrix Spike Duplicate/Duplicate Results**

PFAS: MS14408 (59110-005) did not meet the acceptance criteria for perfluorotridecanoic acid (PFTRIA), likely due to poor recovery of the associated indirect analogue. The recovery for this compound was acceptable in the MSD. The associated sample has been qualified accordingly.

### **Other**

PFAS: Prior to extraction, 59110-004 was poured off due to the presence of sediment in the sample container. As a result, the original sample container could not be rinsed. This may bias results low, as some PFAS readily adhere to surfaces.



**Case Narrative**

**Lab # 59110**

PFAS: Samples 59110-002 and -010 contained substantial amounts of sodium permanganate. To address this, both samples were extracted twice: once at whole volume (~250 mLs) and once at low volume (5 mLs). All analogues showed acceptable recovery in the low volume extracts, while a number of analogues showed poor recovery in the whole volume extracts, indicating matrix interference. Both sets of results have been included in the report.

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

## GLOSSARY

|       |  |
|-------|--|
| %R    | Percent Recovery   |
| BLK   | Blank (Method Blank, Preparation Blank)  |
| CCB   | Continuing Calibration Blank   |
| CCV   | Continuing Calibration Verification  |
| CRM   | Certified Reference Material (associated with solid Metals samples)              |
| CRMD  | Certified Reference Material Duplicate (associated with solid Metals samples)    |
| Dil'n | Dilution   |
| DL    | Detection Limit  |
| DUP   | Duplicate  |
| LCS   | Laboratory Control Sample  |
| LCSD  | Laboratory Control Sample Duplicate  |
| LOD   | Limit of Detection   |
| LOQ   | Limit of Quantitation  |
| MB    | Methanol Blank (associated with solid VOC samples)                               |
| MLCS  | Methanol Laboratory Control Sample (associated with solid VOC samples)           |
| MLCSD | Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples) |
| MS    | Matrix Spike   |
| MSD   | Matrix Spike Duplicate   |
| PB    | Preparation Blank  |
| QC    | Quality Control  |
| RL    | Reporting Limit  |
| RPD   | Relative Percent Difference  |
| SUR   | Surrogate  |



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**- QC Report -**

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | BLK14408 | perfluorotetradecanoic acid (PFTEA)   |                   | 2.0 U  | 2.0             | 0.46     | ng/L      |    |        |     |           |
|            |          | perfluorotridecanoic acid (PFTRIA)  |                   | 2.0 U  | 2.0             | 1.0      | ng/L      |    |        |     |           |
|            |          | perfluorododecanoic acid (PFDOA)  |                   | 2.0 U  | 2.0             | 0.35     | ng/L      |    |        |     |           |
|            |          | perfluoroundecanoic acid (PFUNA)  |                   | 2.0 U  | 2.0             | 0.22     | ng/L      |    |        |     |           |
|            |          | perfluorodecanoic acid (PFDA)   |                   | 2.0 U  | 2.0             | 0.67     | ng/L      |    |        |     |           |
|            |          | perfluorononanoic acid (PFNA)   |                   | 2.0 U  | 2.0             | 0.57     | ng/L      |    |        |     |           |
|            |          | perfluoroctanoic acid (PFOA)  |                   | 2.0 U  | 2.0             | 0.16     | ng/L      |    |        |     |           |
|            |          | perfluoroheptanoic acid (PFHPA)   |                   | 2.0 U  | 2.0             | 0.076    | ng/L      |    |        |     |           |
|            |          | perfluorohexanoic acid (PFHXA)  |                   | 2.0 U  | 2.0             | 0.32     | ng/L      |    |        |     |           |
|            |          | perfluoropentanoic acid (PFPA)  |                   | 2.0 U  | 2.0             | 1.2      | ng/L      |    |        |     |           |
|            |          | perfluorobutanoic acid (PFBA)   |                   | 2.0 U  | 2.0             | 0.15     | ng/L      |    |        |     |           |
|            |          | perfluorodecane sulfonic acid (PFDS)  |                   | 2.0 U  | 2.0             | 0.14     | ng/L      |    |        |     |           |
|            |          | perfluorononanesulfonic acid (PFNS)   |                   | 2.0 U  | 2.0             | 0.23     | ng/L      |    |        |     |           |
|            |          | perfluoroctane sulfonic acid (PFOS)   |                   | 2.0 U  | 2.0             | 0.20     | ng/L      |    |        |     |           |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  |                   | 2.0 U  | 2.0             | 0.21     | ng/L      |    |        |     |           |
|            |          | perfluorohexane sulfonic acid (PFHXS)   |                   | 2.0 U  | 2.0             | 0.34     | ng/L      |    |        |     |           |
|            |          | perfluoropentane sulfonic acid (PFPES)  |                   | 2.0 U  | 2.0             | 0.11     | ng/L      |    |        |     |           |
|            |          | perfluorobutane sulfonic acid (PFBS)  |                   | 2.0 U  | 2.0             | 0.34     | ng/L      |    |        |     |           |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       |                   | 2.0 U  | 2.0             | 0.19     | ng/L      |    |        |     |           |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       |                   | 0.90 J | 2.0             | 0.29     | ng/L      | *  |        |     |           |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       |                   | 2.0 U  | 2.0             | 0.27     | ng/L      |    |        |     |           |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     |                   | 2.0 U  | 2.0             | 0.15     | ng/L      |    |        |     |           |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 |                   | 2.0 U  | 2.0             | 0.23     | ng/L      |    |        |     |           |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      |                   | 2.0 U  | 2.0             | 0.64     | ng/L      |    |        |     |           |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     |                   | 2.0 U  | 2.0             | 0.56     | ng/L      |    |        |     |           |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) |                   | 2.0 U  | 2.0             | 0.20     | ng/L      |    |        |     |           |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      |                   | 2.0 U  | 2.0             | 0.18     | ng/L      |    |        |     |           |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              |                   | 2.0 U  | 2.0             | 0.19     | ng/L      |    |        |     |           |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  |                   | 2.0 U  | 2.0             | 0.14     | ng/L      |    |        |     |           |
|            |          | 13C2-PFTeA SUR  |                   | 87     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C2-PFDaA SUR  |                   | 88     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C7-PFUuA SUR  |                   | 97     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C6-PFDA SUR   |                   | 100    |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C9-PFNA SUR   |                   | 93     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C8-PFOA SUR   |                   | 85     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C4-PFHxA SUR  |                   | 85     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C5-PFPeA SUR  |                   | 75     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C5-PFPeA SUR  |                   | 93     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C-PFBA SUR  |                   | 86     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C8-PFOS SUR   |                   | 90     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C3-PFHxS SUR  |                   | 87     |                 | %        |           | 50 | 200    |     |           |
|            |          | 13C3-PFBS SUR   |                   | 81     |                 | %        |           | 50 | 200    |     |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | BLK14408 | 13C2-8:2FTSA SUR |                   | 188    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-6:2FTSA SUR |                   | 121    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR |                   | 86     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    |                   | 50     |                 | %        |           | *  | 50 200 |     |           |
|            |          | D3-NMeFOSA SUR   |                   | 13     |                 | %        |           |    | 10 100 |     |           |
|            |          | D5-NEtFOSAA SUR  |                   | 98     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSAA SUR  |                   | 81     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C3-HFPO-DA SUR |                   | 65     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R  | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|-------|-------|-----------|-----|--------|-----|-----------|
| SOP-5317r0 | LCS14408 | perfluorotetradecanoic acid (PFTEA)   |                   | 45     | 2.0             | 0.46  | ng/L  | 40        | 113 | 70 130 |     |           |
|            |          | perfluorotridecanoic acid (PFTRIA)  |                   | 38     | 2.0             | 1.0   | ng/L  | 40        | 95  | 70 130 |     |           |
|            |          | perfluorododecanoic acid (PFDOA)  |                   | 39     | 2.0             | 0.35  | ng/L  | 40        | 99  | 70 130 |     |           |
|            |          | perfluoroundecanoic acid (PFUNA)  |                   | 38     | 2.0             | 0.22  | ng/L  | 40        | 96  | 70 130 |     |           |
|            |          | perfluorodecanoic acid (PFDA)   |                   | 44     | 2.0             | 0.67  | ng/L  | 40        | 110 | 70 130 |     |           |
|            |          | perfluorononanoic acid (PFNA)   |                   | 44     | 2.0             | 0.57  | ng/L  | 40        | 110 | 70 130 |     |           |
|            |          | perfluoroctanoic acid (PFOA)  |                   | 43     | 2.0             | 0.16  | ng/L  | 40        | 108 | 70 130 |     |           |
|            |          | perfluoroheptanoic acid (PFHPA)   |                   | 44     | 2.0             | 0.076 | ng/L  | 40        | 111 | 70 130 |     |           |
|            |          | perfluorohexanoic acid (PFHXA)  |                   | 48     | 2.0             | 0.32  | ng/L  | 40        | 121 | 70 130 |     |           |
|            |          | perfluoropentanoic acid (PFPA)  |                   | 45     | 2.0             | 1.2   | ng/L  | 40        | 113 | 70 130 |     |           |
|            |          | perfluorobutanoic acid (PFBA)   |                   | 44     | 2.0             | 0.15  | ng/L  | 40        | 109 | 70 130 |     |           |
|            |          | perfluorodecane sulfonic acid (PFDS)  |                   | 43     | 2.0             | 0.14  | ng/L  | 40        | 108 | 70 130 |     |           |
|            |          | perfluorononanesulfonic acid (PFNS)   |                   | 44     | 2.0             | 0.23  | ng/L  | 40        | 111 | 70 130 |     |           |
|            |          | perfluoroctane sulfonic acid (PFOS)   |                   | 38     | 2.0             | 0.20  | ng/L  | 40        | 94  | 70 130 |     |           |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  |                   | 47     | 2.0             | 0.21  | ng/L  | 40        | 117 | 70 130 |     |           |
|            |          | perfluorohexane sulfonic acid (PFHXS)   |                   | 41     | 2.0             | 0.34  | ng/L  | 40        | 102 | 70 130 |     |           |
|            |          | perfluoropentane sulfonic acid (PFPES)  |                   | 37     | 2.0             | 0.11  | ng/L  | 40        | 92  | 70 130 |     |           |
|            |          | perfluorobutane sulfonic acid (PFBS)  |                   | 49     | 2.0             | 0.34  | ng/L  | 40        | 123 | 70 130 |     |           |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       |                   | 44     | 2.0             | 0.19  | ng/L  | 40        | 111 | 70 130 |     |           |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       |                   | 47     | 2.0             | 0.29  | ng/L  | 40        | 117 | 70 130 |     |           |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       |                   | 48     | 2.0             | 0.27  | ng/L  | 40        | 119 | 70 130 |     |           |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     |                   | 42     | 2.0             | 0.15  | ng/L  | 40        | 106 | 70 130 |     |           |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 |                   | 38     | 2.0             | 0.23  | ng/L  | 40        | 95  | 70 130 |     |           |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      |                   | 36     | 2.0             | 0.64  | ng/L  | 40        | 90  | 70 130 |     |           |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     |                   | 40     | 2.0             | 0.56  | ng/L  | 40        | 100 | 70 130 |     |           |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) |                   | 41     | 2.0             | 0.20  | ng/L  | 40        | 102 | 70 130 |     |           |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      |                   | 44     | 2.0             | 0.18  | ng/L  | 40        | 109 | 70 130 |     |           |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              |                   | 37     | 2.0             | 0.19  | ng/L  | 40        | 93  | 70 130 |     |           |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  |                   | 40     | 2.0             | 0.14  | ng/L  | 40        | 101 | 70 130 |     |           |
|            |          | 13C2-PFTeA SUR  |                   | 109    |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C2-PFDoA SUR  |                   | 104    |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C7-PFUnA SUR  |                   | 101    |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C6-PFDA SUR   |                   | 111    |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C9-PFNA SUR   |                   | 94     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C8-PFOA SUR   |                   | 90     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C4-PFHxA SUR  |                   | 87     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C5-PFHxA SUR  |                   | 81     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C5-PFPeA SUR  |                   | 89     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C-PFBA SUR  |                   | 84     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C8-PFOS SUR   |                   | 84     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C3-PFHxS SUR  |                   | 83     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C3-PFBS SUR   |                   | 77     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C2-8:2FTSA SUR  |                   | 142    |                 |       | %     |           |     | 50 200 |     |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | LCS14408 | 13C2-6:2FTSA SUR |                   | 104    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR |                   | 81     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    |                   | 55     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSA SUR   |                   | 16     |                 | %        |           |    | 10 100 |     |           |
|            |          | D5-NetFOSAA SUR  |                   | 102    |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSAA SUR  |                   | 90     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C3-HFPO-DA SUR |                   | 78     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID   | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R    | Limits | RPD | RPD Limit |
|------------|---------|---|-------------------|--------|-----------------|-------|-------|-----------|-------|--------|-----|-----------|
| SOP-5317r0 | MS14408 | perfluorotetradecanoic acid (PFTEA)   | 59110-005         | 40     | 1.7             | 0.39  | ng/L  | 33        | 117   | 70 130 |     |           |
|            |         | perfluorotridecanoic acid (PFTRIA)  | 59110-005         | 52     | 1.7             | 0.86  | ng/L  | 33        | 154 * | 70 130 |     |           |
|            |         | perfluorododecanoic acid (PFDOA)  | 59110-005         | 36     | 1.7             | 0.30  | ng/L  | 33        | 106   | 70 130 |     |           |
|            |         | perfluoroundecanoic acid (PFUNA)  | 59110-005         | 35     | 1.7             | 0.19  | ng/L  | 33        | 104   | 70 130 |     |           |
|            |         | perfluorodecanoic acid (PFDA)   | 59110-005         | 39     | 1.7             | 0.57  | ng/L  | 33        | 115   | 70 130 |     |           |
|            |         | perfluorononanoic acid (PFNA)   | 59110-005         | 38     | 1.7             | 0.48  | ng/L  | 33        | 111   | 70 130 |     |           |
|            |         | perfluoroctanoic acid (PFOA)  | 59110-005         | 37     | 1.7             | 0.14  | ng/L  | 33        | 109   | 70 130 |     |           |
|            |         | perfluoroheptanoic acid (PFHPA)   | 59110-005         | 43     | 1.7             | 0.065 | ng/L  | 33        | 126   | 70 130 |     |           |
|            |         | perfluorohexanoic acid (PFHXA)  | 59110-005         | 41     | 1.7             | 0.27  | ng/L  | 33        | 121   | 70 130 |     |           |
|            |         | perfluoropentanoic acid (PFPA)  | 59110-005         | 38     | 1.7             | 1.1   | ng/L  | 33        | 112   | 70 130 |     |           |
|            |         | perfluorobutanoic acid (PFBA)   | 59110-005         | 38     | 1.7             | 0.13  | ng/L  | 33        | 112   | 70 130 |     |           |
|            |         | perfluorodecane sulfonic acid (PFDS)  | 59110-005         | 30     | 1.7             | 0.12  | ng/L  | 33        | 88    | 70 130 |     |           |
|            |         | perfluorononanesulfonic acid (PFNS)   | 59110-005         | 35     | 1.7             | 0.20  | ng/L  | 33        | 103   | 70 130 |     |           |
|            |         | perfluoroctane sulfonic acid (PFOS)   | 59110-005         | 32     | 1.7             | 0.17  | ng/L  | 33        | 95    | 70 130 |     |           |
|            |         | perfluoroheptane sulfonic acid (PFHPS)  | 59110-005         | 41     | 1.7             | 0.18  | ng/L  | 33        | 121   | 70 130 |     |           |
|            |         | perfluorohexane sulfonic acid (PFHXS)   | 59110-005         | 35     | 1.7             | 0.29  | ng/L  | 33        | 104   | 70 130 |     |           |
|            |         | perfluoropentane sulfonic acid (PFPES)  | 59110-005         | 31     | 1.7             | 0.095 | ng/L  | 33        | 93    | 70 130 |     |           |
|            |         | perfluorobutane sulfonic acid (PFBS)  | 59110-005         | 42     | 1.7             | 0.29  | ng/L  | 33        | 125   | 70 130 |     |           |
|            |         | 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 59110-005         | 39     | 1.7             | 0.16  | ng/L  | 33        | 115   | 70 130 |     |           |
|            |         | 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 59110-005         | 39     | 1.7             | 0.24  | ng/L  | 33        | 115   | 70 130 |     |           |
|            |         | 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 59110-005         | 41     | 1.7             | 0.23  | ng/L  | 33        | 120   | 70 130 |     |           |
|            |         | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 59110-005         | 37     | 1.7             | 0.13  | ng/L  | 33        | 110   | 70 130 |     |           |
|            |         | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 59110-005         | 34     | 1.7             | 0.20  | ng/L  | 33        | 101   | 70 130 |     |           |
|            |         | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 59110-005         | 31     | 1.7             | 0.55  | ng/L  | 33        | 92    | 70 130 |     |           |
|            |         | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 59110-005         | 35     | 1.7             | 0.48  | ng/L  | 33        | 103   | 70 130 |     |           |
|            |         | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 59110-005         | 38     | 1.7             | 0.17  | ng/L  | 33        | 112   | 70 130 |     |           |
|            |         | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 59110-005         | 40     | 1.7             | 0.16  | ng/L  | 33        | 119   | 70 130 |     |           |
|            |         | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 59110-005         | 27     | 1.7             | 0.16  | ng/L  | 33        | 80    | 70 130 |     |           |
|            |         | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 59110-005         | 36     | 1.7             | 0.12  | ng/L  | 33        | 105   | 70 130 |     |           |
|            |         | 13C2-PFTeA SUR  | 59110-005         | 37     |                 |       | %     |           | *     | 50 200 |     |           |
|            |         | 13C2-PFDoA SUR  | 59110-005         | 73     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C7-PFUnA SUR  | 59110-005         | 93     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C6-PFDA SUR   | 59110-005         | 103    |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C9-PFNA SUR   | 59110-005         | 101    |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C8-PFOA SUR   | 59110-005         | 88     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C4-PFHpA SUR  | 59110-005         | 78     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C5-PFHxA SUR  | 59110-005         | 71     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C5-PFPeA SUR  | 59110-005         | 121    |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C-PFBA SUR  | 59110-005         | 86     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C8-PFOS SUR   | 59110-005         | 87     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C3-PFHxS SUR  | 59110-005         | 86     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C3-PFBS SUR   | 59110-005         | 81     |                 |       | %     |           |       | 50 200 |     |           |
|            |         | 13C2-8:2FTSA SUR  | 59110-005         | 158    |                 |       | %     |           |       | 50 200 |     |           |

| Method     | QC ID   | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|---------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | MS14408 | 13C2-6:2FTSA SUR | 59110-005         | 155    |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C2-4:2FTSA SUR | 59110-005         | 171    |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C8-FOSA SUR    | 59110-005         | 74     |                 | %        |           |    | 50 200 |     |           |
|            |         | D3-NMeFOSA SUR   | 59110-005         | 26     |                 | %        |           |    | 10 100 |     |           |
|            |         | D5-NetFOSAA SUR  | 59110-005         | 100    |                 | %        |           |    | 50 200 |     |           |
|            |         | D3-NMeFOSAA SUR  | 59110-005         | 87     |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C3-HFPO-DA SUR | 59110-005         | 57     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R  | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|-------|-------|-----------|-----|--------|-----|-----------|
| SOP-5317r0 | MSD14408 | perfluorotetradecanoic acid (PFTEA)   | 59110-005         | 38     | 1.7             | 0.40  | ng/L  | 34        | 109 | 70 130 | 4   | 30        |
|            |          | perfluorotridecanoic acid (PFTRIA)  | 59110-005         | 34     | 1.7             | 0.89  | ng/L  | 34        | 98  | 70 130 | 42  | *         |
|            |          | perfluorododecanoic acid (PFDOA)  | 59110-005         | 34     | 1.7             | 0.31  | ng/L  | 34        | 98  | 70 130 | 5   | 30        |
|            |          | perfluoroundecanoic acid (PFUNA)  | 59110-005         | 35     | 1.7             | 0.20  | ng/L  | 34        | 100 | 70 130 | 1   | 30        |
|            |          | perfluorodecanoic acid (PFDA)   | 59110-005         | 41     | 1.7             | 0.59  | ng/L  | 34        | 118 | 70 130 | 6   | 30        |
|            |          | perfluorononanoic acid (PFNA)   | 59110-005         | 37     | 1.7             | 0.50  | ng/L  | 34        | 106 | 70 130 | 2   | 30        |
|            |          | perfluoroctanoic acid (PFOA)  | 59110-005         | 40     | 1.7             | 0.14  | ng/L  | 34        | 115 | 70 130 | 8   | 30        |
|            |          | perfluoroheptanoic acid (PFHPA)   | 59110-005         | 42     | 1.7             | 0.067 | ng/L  | 34        | 120 | 70 130 | 2   | 30        |
|            |          | perfluorohexanoic acid (PFHXA)  | 59110-005         | 40     | 1.7             | 0.28  | ng/L  | 34        | 114 | 70 130 | 3   | 30        |
|            |          | perfluoropentanoic acid (PFPA)  | 59110-005         | 39     | 1.7             | 1.1   | ng/L  | 34        | 111 | 70 130 | 2   | 30        |
|            |          | perfluorobutanoic acid (PFBA)   | 59110-005         | 38     | 1.7             | 0.14  | ng/L  | 34        | 108 | 70 130 | 1   | 30        |
|            |          | perfluorodecane sulfonic acid (PFDS)  | 59110-005         | 36     | 1.7             | 0.12  | ng/L  | 34        | 103 | 70 130 | 18  | 30        |
|            |          | perfluorononanesulfonic acid (PFNS)   | 59110-005         | 37     | 1.7             | 0.20  | ng/L  | 34        | 106 | 70 130 | 6   | 30        |
|            |          | perfluoroctane sulfonic acid (PFOS)   | 59110-005         | 32     | 1.7             | 0.18  | ng/L  | 34        | 92  | 70 130 | 1   | 30        |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  | 59110-005         | 42     | 1.7             | 0.19  | ng/L  | 34        | 119 | 70 130 | 1   | 30        |
|            |          | perfluorohexane sulfonic acid (PFHXS)   | 59110-005         | 36     | 1.7             | 0.30  | ng/L  | 34        | 102 | 70 130 | 1   | 30        |
|            |          | perfluoropentane sulfonic acid (PFPES)  | 59110-005         | 32     | 1.7             | 0.098 | ng/L  | 34        | 91  | 70 130 | 1   | 30        |
|            |          | perfluorobutane sulfonic acid (PFBS)  | 59110-005         | 42     | 1.7             | 0.30  | ng/L  | 34        | 121 | 70 130 | 0   | 30        |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 59110-005         | 39     | 1.7             | 0.17  | ng/L  | 34        | 111 | 70 130 | 0   | 30        |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 59110-005         | 38     | 1.7             | 0.25  | ng/L  | 34        | 110 | 70 130 | 1   | 30        |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 59110-005         | 41     | 1.7             | 0.23  | ng/L  | 34        | 117 | 70 130 | 1   | 30        |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 59110-005         | 37     | 1.7             | 0.13  | ng/L  | 34        | 106 | 70 130 | 1   | 30        |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 59110-005         | 32     | 1.7             | 0.20  | ng/L  | 34        | 91  | 70 130 | 8   | 30        |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 59110-005         | 31     | 1.7             | 0.56  | ng/L  | 34        | 89  | 70 130 | 0   | 30        |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 59110-005         | 33     | 1.7             | 0.49  | ng/L  | 34        | 93  | 70 130 | 7   | 30        |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 59110-005         | 34     | 1.7             | 0.17  | ng/L  | 34        | 97  | 70 130 | 11  | 30        |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 59110-005         | 40     | 1.7             | 0.16  | ng/L  | 34        | 115 | 70 130 | 0   | 30        |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 59110-005         | 32     | 1.7             | 0.17  | ng/L  | 34        | 91  | 70 130 | 16  | 30        |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 59110-005         | 35     | 1.7             | 0.12  | ng/L  | 34        | 101 | 70 130 | 1   | 30        |
|            |          | 13C2-PFTeA SUR  | 59110-005         | 87     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C2-PFDoA SUR  | 59110-005         | 89     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C7-PFUnA SUR  | 59110-005         | 97     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C6-PFDA SUR   | 59110-005         | 92     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C9-PFNA SUR   | 59110-005         | 96     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C8-PFOA SUR   | 59110-005         | 81     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C4-PFHpA SUR  | 59110-005         | 76     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C5-PFHxA SUR  | 59110-005         | 72     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C5-PFPeA SUR  | 59110-005         | 113    |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C-PFBA SUR  | 59110-005         | 84     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C8-PFOS SUR   | 59110-005         | 86     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C3-PFHxS SUR  | 59110-005         | 85     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C3-PFBS SUR   | 59110-005         | 81     |                 |       | %     |           |     | 50 200 |     |           |
|            |          | 13C2-8:2FTSA SUR  | 59110-005         | 104    |                 |       | %     |           |     | 50 200 |     |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | MSD14408 | 13C2-6:2FTSA SUR | 59110-005         | 134    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR | 59110-005         | 163    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    | 59110-005         | 63     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSA SUR   | 59110-005         | 19     |                 | %        |           |    | 10 100 |     |           |
|            |          | D5-NetFOSAA SUR  | 59110-005         | 91     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSAA SUR  | 59110-005         | 87     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C3-HFPO-DA SUR | 59110-005         | 59     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|-------|-------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | BLK14427 | perfluorotetradecanoic acid (PFTEA)   |                   | 2.0 U  | 2.0             | 0.46  | ng/L  |           |    |        |     |           |
|            |          | perfluorotridecanoic acid (PFTRIA)  |                   | 2.0 U  | 2.0             | 1.0   | ng/L  |           |    |        |     |           |
|            |          | perfluorododecanoic acid (PFDOA)  |                   | 2.0 U  | 2.0             | 0.35  | ng/L  |           |    |        |     |           |
|            |          | perfluoroundecanoic acid (PFUNA)  |                   | 2.0 U  | 2.0             | 0.22  | ng/L  |           |    |        |     |           |
|            |          | perfluorodecanoic acid (PFDA)   |                   | 2.0 U  | 2.0             | 0.67  | ng/L  |           |    |        |     |           |
|            |          | perfluorononanoic acid (PFNA)   |                   | 2.0 U  | 2.0             | 0.57  | ng/L  |           |    |        |     |           |
|            |          | perfluoroctanoic acid (PFOA)  |                   | 2.0 U  | 2.0             | 0.16  | ng/L  |           |    |        |     |           |
|            |          | perfluoroheptanoic acid (PFHPA)   |                   | 2.0 U  | 2.0             | 0.076 | ng/L  |           |    |        |     |           |
|            |          | perfluorohexanoic acid (PFHXA)  |                   | 2.0 U  | 2.0             | 0.32  | ng/L  |           |    |        |     |           |
|            |          | perfluoropentanoic acid (PFPA)  |                   | 2.0 U  | 2.0             | 1.2   | ng/L  |           |    |        |     |           |
|            |          | perfluorobutanoic acid (PFBA)   |                   | 2.0 U  | 2.0             | 0.15  | ng/L  |           |    |        |     |           |
|            |          | perfluorodecane sulfonic acid (PFDS)  |                   | 2.0 U  | 2.0             | 0.14  | ng/L  |           |    |        |     |           |
|            |          | perfluorononanesulfonic acid (PFNS)   |                   | 2.0 U  | 2.0             | 0.23  | ng/L  |           |    |        |     |           |
|            |          | perfluoroctane sulfonic acid (PFOS)   |                   | 2.0 U  | 2.0             | 0.20  | ng/L  |           |    |        |     |           |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  |                   | 2.0 U  | 2.0             | 0.21  | ng/L  |           |    |        |     |           |
|            |          | perfluorohexane sulfonic acid (PFHXS)   |                   | 2.0 U  | 2.0             | 0.34  | ng/L  |           |    |        |     |           |
|            |          | perfluoropentane sulfonic acid (PFPES)  |                   | 2.0 U  | 2.0             | 0.11  | ng/L  |           |    |        |     |           |
|            |          | perfluorobutane sulfonic acid (PFBS)  |                   | 2.0 U  | 2.0             | 0.34  | ng/L  |           |    |        |     |           |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       |                   | 2.0 U  | 2.0             | 0.19  | ng/L  |           |    |        |     |           |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       |                   | 2.0 U  | 2.0             | 0.29  | ng/L  |           |    |        |     |           |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       |                   | 2.0 U  | 2.0             | 0.27  | ng/L  |           |    |        |     |           |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     |                   | 1.1 J  | 2.0             | 0.15  | ng/L  |           | *  |        |     |           |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 |                   | 9.1    | 2.0             | 0.23  | ng/L  |           | *  |        |     |           |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      |                   | 2.0 U  | 2.0             | 0.64  | ng/L  |           |    |        |     |           |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     |                   | 2.0 U  | 2.0             | 0.56  | ng/L  |           |    |        |     |           |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) |                   | 2.0 U  | 2.0             | 0.20  | ng/L  |           |    |        |     |           |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      |                   | 2.0 U  | 2.0             | 0.18  | ng/L  |           |    |        |     |           |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              |                   | 2.0 U  | 2.0             | 0.19  | ng/L  |           |    |        |     |           |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  |                   | 2.0 U  | 2.0             | 0.14  | ng/L  |           |    |        |     |           |
|            |          | 13C2-PFTeA SUR  |                   | 92     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C2-PFDoA SUR  |                   | 76     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C7-PFUnA SUR  |                   | 89     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C6-PFDA SUR   |                   | 88     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C9-PFNA SUR   |                   | 78     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C8-PFOA SUR   |                   | 89     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C4-PFHxA SUR  |                   | 85     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C5-PFHxA SUR  |                   | 82     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C5-PFPeA SUR  |                   | 92     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C-PFBA SUR  |                   | 86     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C8-PFOS SUR   |                   | 91     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C3-PFHxS SUR  |                   | 94     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C3-PFBS SUR   |                   | 96     |                 |       | %     |           |    | 50     | 200 |           |
|            |          | 13C2-8:2FTSA SUR  |                   | 88     |                 |       | %     |           |    | 50     | 200 |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | BLK14427 | 13C2-6:2FTSA SUR |                   | 103    |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR |                   | 98     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    |                   | 4      |                 | %        |           | *  | 50 200 |     |           |
|            |          | D3-NMeFOSA SUR   |                   | 0      |                 | %        |           | *  | 10 100 |     |           |
|            |          | D5-NetFOSAA SUR  |                   | 80     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSAA SUR  |                   | 70     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C3-HFPO-DA SUR |                   | 80     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL Units   | Amt Added | %R  | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|------------|-----------|-----|--------|-----|-----------|
| SOP-5317r0 | LCS14427 | perfluorotetradecanoic acid (PFTEA)   |                   | 44     | 2.0             | 0.46 ng/L  | 40        | 110 | 70 130 |     |           |
|            |          | perfluorotridecanoic acid (PFTRIA)  |                   | 33     | 2.0             | 1.0 ng/L   | 40        | 82  | 70 130 |     |           |
|            |          | perfluorododecanoic acid (PFDOA)  |                   | 38     | 2.0             | 0.35 ng/L  | 40        | 96  | 70 130 |     |           |
|            |          | perfluoroundecanoic acid (PFUNA)  |                   | 40     | 2.0             | 0.22 ng/L  | 40        | 100 | 70 130 |     |           |
|            |          | perfluorodecanoic acid (PFDA)   |                   | 45     | 2.0             | 0.67 ng/L  | 40        | 113 | 70 130 |     |           |
|            |          | perfluorononanoic acid (PFNA)   |                   | 48     | 2.0             | 0.57 ng/L  | 40        | 121 | 70 130 |     |           |
|            |          | perfluoroctanoic acid (PFOA)  |                   | 42     | 2.0             | 0.16 ng/L  | 40        | 106 | 70 130 |     |           |
|            |          | perfluoroheptanoic acid (PFHPA)   |                   | 43     | 2.0             | 0.076 ng/L | 40        | 107 | 70 130 |     |           |
|            |          | perfluorohexanoic acid (PFHXA)  |                   | 46     | 2.0             | 0.32 ng/L  | 40        | 114 | 70 130 |     |           |
|            |          | perfluoropentanoic acid (PFPA)  |                   | 41     | 2.0             | 1.2 ng/L   | 40        | 103 | 70 130 |     |           |
|            |          | perfluorobutanoic acid (PFBA)   |                   | 41     | 2.0             | 0.15 ng/L  | 40        | 102 | 70 130 |     |           |
|            |          | perfluorodecane sulfonic acid (PFDS)  |                   | 44     | 2.0             | 0.14 ng/L  | 40        | 109 | 70 130 |     |           |
|            |          | perfluorononanesulfonic acid (PFNS)   |                   | 43     | 2.0             | 0.23 ng/L  | 40        | 107 | 70 130 |     |           |
|            |          | perfluoroctane sulfonic acid (PFOS)   |                   | 36     | 2.0             | 0.20 ng/L  | 40        | 91  | 70 130 |     |           |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  |                   | 45     | 2.0             | 0.21 ng/L  | 40        | 113 | 70 130 |     |           |
|            |          | perfluorohexane sulfonic acid (PFHXS)   |                   | 40     | 2.0             | 0.34 ng/L  | 40        | 99  | 70 130 |     |           |
|            |          | perfluoropentane sulfonic acid (PFPES)  |                   | 38     | 2.0             | 0.11 ng/L  | 40        | 96  | 70 130 |     |           |
|            |          | perfluorobutane sulfonic acid (PFBS)  |                   | 45     | 2.0             | 0.34 ng/L  | 40        | 113 | 70 130 |     |           |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       |                   | 42     | 2.0             | 0.19 ng/L  | 40        | 105 | 70 130 |     |           |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       |                   | 41     | 2.0             | 0.29 ng/L  | 40        | 102 | 70 130 |     |           |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       |                   | 44     | 2.0             | 0.27 ng/L  | 40        | 110 | 70 130 |     |           |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     |                   | 41     | 2.0             | 0.15 ng/L  | 40        | 102 | 70 130 |     |           |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 |                   | 39     | 2.0             | 0.23 ng/L  | 40        | 99  | 70 130 |     |           |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      |                   | 36     | 2.0             | 0.64 ng/L  | 40        | 90  | 70 130 |     |           |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     |                   | 40     | 2.0             | 0.56 ng/L  | 40        | 101 | 70 130 |     |           |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) |                   | 38     | 2.0             | 0.20 ng/L  | 40        | 94  | 70 130 |     |           |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      |                   | 43     | 2.0             | 0.18 ng/L  | 40        | 108 | 70 130 |     |           |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              |                   | 35     | 2.0             | 0.19 ng/L  | 40        | 88  | 70 130 |     |           |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  |                   | 40     | 2.0             | 0.14 ng/L  | 40        | 100 | 70 130 |     |           |
|            |          | 13C2-PFTeA SUR  |                   | 101    |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C2-PFDoA SUR  |                   | 88     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C7-PFUnA SUR  |                   | 99     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C6-PFDA SUR   |                   | 86     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C9-PFNA SUR   |                   | 84     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C8-PFOA SUR   |                   | 88     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C4-PFHpA SUR  |                   | 84     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C5-PFHxA SUR  |                   | 80     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C5-PFPeA SUR  |                   | 92     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C-PFBA SUR  |                   | 87     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C8-PFOS SUR   |                   | 88     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C3-PFHxS SUR  |                   | 87     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C3-PFBS SUR   |                   | 86     |                 | %          |           |     | 50 200 |     |           |
|            |          | 13C2-8:2FTSA SUR  |                   | 87     |                 | %          |           |     | 50 200 |     |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | LCS14427 | 13C2-6:2FTSA SUR |                   | 93     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR |                   | 85     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    |                   | 18     |                 | %        |           | *  | 50 200 |     |           |
|            |          | D3-NMeFOSA SUR   |                   | 2      |                 | %        |           | *  | 10 100 |     |           |
|            |          | D5-NetFOSAA SUR  |                   | 83     |                 | %        |           |    | 50 200 |     |           |
|            |          | D3-NMeFOSAA SUR  |                   | 80     |                 | %        |           |    | 50 200 |     |           |
|            |          | 13C3-HFPO-DA SUR |                   | 85     |                 | %        |           |    | 50 200 |     |           |

| Method     | QC ID   | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R    | Limits | RPD | RPD Limit |
|------------|---------|---|-------------------|--------|-----------------|-------|-------|-----------|-------|--------|-----|-----------|
| SOP-5317r0 | MS14427 | perfluorotetradecanoic acid (PFTEA)   | 59250-047         | 43     | 1.9             | 0.45  | ng/L  | 38        | 111   | 70 130 |     |           |
|            |         | perfluorotridecanoic acid (PFTRIA)  | 59250-047         | 33     | 1.9             | 0.99  | ng/L  | 38        | 85    | 70 130 |     |           |
|            |         | perfluorododecanoic acid (PFDOA)  | 59250-047         | 36     | 1.9             | 0.34  | ng/L  | 38        | 93    | 70 130 |     |           |
|            |         | perfluoroundecanoic acid (PFUNA)  | 59250-047         | 40     | 1.9             | 0.22  | ng/L  | 38        | 103   | 70 130 |     |           |
|            |         | perfluorodecanoic acid (PFDA)   | 59250-047         | 41     | 1.9             | 0.65  | ng/L  | 38        | 106   | 70 130 |     |           |
|            |         | perfluorononanoic acid (PFNA)   | 59250-047         | 42     | 1.9             | 0.55  | ng/L  | 38        | 45 *  | 70 130 |     |           |
|            |         | perfluoroctanoic acid (PFOA)  | 59250-047         | 210    | 1.9             | 0.16  | ng/L  | 38.9      | 139 * | 70 130 |     |           |
|            |         | perfluoroheptanoic acid (PFHPA)   | 59250-047         | 85     | 1.9             | 0.074 | ng/L  | 38        | 106   | 70 130 |     |           |
|            |         | perfluorohexanoic acid (PFHXA)  | 59250-047         | 150    | 1.9             | 0.31  | ng/L  | 38.9      | 110   | 70 130 |     |           |
|            |         | perfluoropentanoic acid (PFPA)  | 59250-047         | 88     | 1.9             | 1.2   | ng/L  | 38        | 99    | 70 130 |     |           |
|            |         | perfluorobutanoic acid (PFBA)   | 59250-047         | 83     | 1.9             | 0.15  | ng/L  | 38        | 98    | 70 130 |     |           |
|            |         | perfluorodecane sulfonic acid (PFDS)  | 59250-047         | 47     | 1.9             | 0.14  | ng/L  | 38        | 122   | 70 130 |     |           |
|            |         | perfluorononanesulfonic acid (PFNS)   | 59250-047         | 45     | 1.9             | 0.22  | ng/L  | 38        | 115   | 70 130 |     |           |
|            |         | perfluoroctane sulfonic acid (PFOS)   | 59250-047         | 63     | 1.9             | 0.20  | ng/L  | 38        | 91    | 70 130 |     |           |
|            |         | perfluoroheptane sulfonic acid (PFHPS)  | 59250-047         | 44     | 1.9             | 0.21  | ng/L  | 38        | 108   | 70 130 |     |           |
|            |         | perfluorohexane sulfonic acid (PFHXS)   | 59250-047         | 110    | 1.9             | 0.33  | ng/L  | 38.9      | 102   | 70 130 |     |           |
|            |         | perfluoropentane sulfonic acid (PFPES)  | 59250-047         | 60     | 1.9             | 0.11  | ng/L  | 38        | 100   | 70 130 |     |           |
|            |         | perfluorobutane sulfonic acid (PFBS)  | 59250-047         | 93     | 1.9             | 0.33  | ng/L  | 38        | 113   | 70 130 |     |           |
|            |         | 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 59250-047         | 39     | 1.9             | 0.19  | ng/L  | 38        | 101   | 70 130 |     |           |
|            |         | 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 59250-047         | 40     | 1.9             | 0.28  | ng/L  | 38        | 104   | 70 130 |     |           |
|            |         | 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 59250-047         | 41     | 1.9             | 0.26  | ng/L  | 38        | 106   | 70 130 |     |           |
|            |         | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 59250-047         | 40     | 1.9             | 0.15  | ng/L  | 38        | 103   | 70 130 |     |           |
|            |         | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 59250-047         | 38     | 1.9             | 0.22  | ng/L  | 38        | 97    | 70 130 |     |           |
|            |         | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 59250-047         | 33     | 1.9             | 0.63  | ng/L  | 38        | 85    | 70 130 |     |           |
|            |         | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 59250-047         | 39     | 1.9             | 0.55  | ng/L  | 38        | 100   | 70 130 |     |           |
|            |         | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 59250-047         | 41     | 1.9             | 0.19  | ng/L  | 38        | 105   | 70 130 |     |           |
|            |         | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 59250-047         | 41     | 1.9             | 0.18  | ng/L  | 38        | 106   | 70 130 |     |           |
|            |         | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 59250-047         | 37     | 1.9             | 0.18  | ng/L  | 38        | 96    | 70 130 |     |           |
|            |         | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 59250-047         | 42     | 1.9             | 0.13  | ng/L  | 38        | 108   | 70 130 |     |           |
|            |         | 13C2-PFTeA SUR  | 59250-047         | 90     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C2-PFDoA SUR  | 59250-047         | 79     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C7-PFUnA SUR  | 59250-047         | 102    |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C6-PFDA SUR   | 59250-047         | 98     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C9-PFNA SUR   | 59250-047         | 96     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C8-PFOA SUR   | 59250-047         | 87     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C4-PFHpA SUR  | 59250-047         | 80     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C5-PFHxA SUR  | 59250-047         | 56     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C5-PFPeA SUR  | 59250-047         | 237    |                 |       | %     |           | *     | 50     | 200 |           |
|            |         | 13C-PFBA SUR  | 59250-047         | 87     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C8-PFOS SUR   | 59250-047         | 89     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C3-PFHxS SUR  | 59250-047         | 81     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C3-PFBS SUR   | 59250-047         | 77     |                 |       | %     |           | 50    | 200    |     |           |
|            |         | 13C2-8:2FTSA SUR  | 59250-047         | 113    |                 |       | %     |           | 50    | 200    |     |           |

| Method     | QC ID   | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R | Limits | RPD | RPD Limit |
|------------|---------|------------------|-------------------|--------|-----------------|----------|-----------|----|--------|-----|-----------|
| SOP-5317r0 | MS14427 | 13C2-6:2FTSA SUR | 59250-047         | 143    |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C2-4:2FTSA SUR | 59250-047         | 110    |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C8-FOSA SUR    | 59250-047         | 19     |                 | %        |           | *  | 50 200 |     |           |
|            |         | D3-NMeFOSA SUR   | 59250-047         | 1      |                 | %        |           | *  | 10 100 |     |           |
|            |         | D5-NetFOSAA SUR  | 59250-047         | 84     |                 | %        |           |    | 50 200 |     |           |
|            |         | D3-NMeFOSAA SUR  | 59250-047         | 72     |                 | %        |           |    | 50 200 |     |           |
|            |         | 13C3-HFPO-DA SUR | 59250-047         | 49     |                 | %        |           | *  | 50 200 |     |           |

| Method     | QC ID    | Parameter   | Associated Sample | Result | Reporting Limit | DL    | Units | Amt Added | %R    | Limits | RPD | RPD Limit |
|------------|----------|---|-------------------|--------|-----------------|-------|-------|-----------|-------|--------|-----|-----------|
| SOP-5317r0 | MSD14427 | perfluorotetradecanoic acid (PFTEA)   | 59250-047         | 41     | 1.9             | 0.43  | ng/L  | 37        | 112   | 70 130 | 4   | 30        |
|            |          | perfluorotridecanoic acid (PFTRIA)  | 59250-047         | 35     | 1.9             | 0.94  | ng/L  | 37        | 94    | 70 130 | 5   | 30        |
|            |          | perfluorododecanoic acid (PFDCA)  | 59250-047         | 34     | 1.9             | 0.33  | ng/L  | 37        | 93    | 70 130 | 5   | 30        |
|            |          | perfluoroundecanoic acid (PFUNA)  | 59250-047         | 39     | 1.9             | 0.21  | ng/L  | 37        | 104   | 70 130 | 4   | 30        |
|            |          | perfluorodecanoic acid (PFDA)   | 59250-047         | 38     | 1.9             | 0.62  | ng/L  | 37        | 102   | 70 130 | 9   | 30        |
|            |          | perfluorononanoic acid (PFNA)   | 59250-047         | 42     | 1.9             | 0.53  | ng/L  | 37        | 47 *  | 70 130 | 0   | 30        |
|            |          | perfluoroctanoic acid (PFOA)  | 59250-047         | 200    | 1.9             | 0.15  | ng/L  | 37.0      | 135 * | 70 130 | 2   | 30        |
|            |          | perfluoroheptanoic acid (PFHPA)   | 59250-047         | 85     | 1.9             | 0.071 | ng/L  | 37        | 112   | 70 130 | 0   | 30        |
|            |          | perfluorohexanoic acid (PFHXA)  | 59250-047         | 160    | 1.9             | 0.29  | ng/L  | 37.0      | 133 * | 70 130 | 4   | 30        |
|            |          | perfluoropentanoic acid (PFPA)  | 59250-047         | 87     | 1.9             | 1.2   | ng/L  | 37        | 103   | 70 130 | 1   | 30        |
|            |          | perfluorobutanoic acid (PFBA)   | 59250-047         | 83     | 1.9             | 0.14  | ng/L  | 37        | 103   | 70 130 | 0   | 30        |
|            |          | perfluorodecane sulfonic acid (PFDS)  | 59250-047         | 47     | 1.9             | 0.13  | ng/L  | 37        | 126   | 70 130 | 2   | 30        |
|            |          | perfluorononanesulfonic acid (PFNS)   | 59250-047         | 43     | 1.9             | 0.21  | ng/L  | 37        | 117   | 70 130 | 3   | 30        |
|            |          | perfluoroctane sulfonic acid (PFOS)   | 59250-047         | 64     | 1.9             | 0.19  | ng/L  | 37        | 98    | 70 130 | 2   | 30        |
|            |          | perfluoroheptane sulfonic acid (PFHPS)  | 59250-047         | 44     | 1.9             | 0.20  | ng/L  | 37        | 113   | 70 130 | 1   | 30        |
|            |          | perfluorohexane sulfonic acid (PFHXS)   | 59250-047         | 110    | 1.9             | 0.32  | ng/L  | 37.0      | 114   | 70 130 | 3   | 30        |
|            |          | perfluoropentane sulfonic acid (PFPES)  | 59250-047         | 60     | 1.9             | 0.10  | ng/L  | 37        | 105   | 70 130 | 0   | 30        |
|            |          | perfluorobutane sulfonic acid (PFBS)  | 59250-047         | 94     | 1.9             | 0.31  | ng/L  | 37        | 120   | 70 130 | 0   | 30        |
|            |          | 8:2 fluorotelomer sulfonic acid (82FTS)                                       | 59250-047         | 38     | 1.9             | 0.18  | ng/L  | 37        | 103   | 70 130 | 3   | 30        |
|            |          | 6:2 fluorotelomer sulfonic acid (62FTS)                                       | 59250-047         | 39     | 1.9             | 0.26  | ng/L  | 37        | 105   | 70 130 | 4   | 30        |
|            |          | 4:2 fluorotelomer sulfonic acid (42FTS)                                       | 59250-047         | 41     | 1.9             | 0.25  | ng/L  | 37        | 110   | 70 130 | 1   | 30        |
|            |          | perfluoroctane sulfonamide (PFOSA) (FOSA)                                     | 59250-047         | 39     | 1.9             | 0.14  | ng/L  | 37        | 106   | 70 130 | 2   | 30        |
|            |          | n-methyl perfluoroctane sulfonamide (NMEFOSA)                                 | 59250-047         | 35     | 1.9             | 0.21  | ng/L  | 37        | 94    | 70 130 | 8   | 30        |
|            |          | n-ethyl perfluoroctanesulfonamido acetic acid (NETFOSAA)                      | 59250-047         | 32     | 1.9             | 0.60  | ng/L  | 37        | 86    | 70 130 | 4   | 30        |
|            |          | n-methylperfluoroctane sulfonamido acetic acid (NMEFOSAA)                     | 59250-047         | 39     | 1.9             | 0.52  | ng/L  | 37        | 106   | 70 130 | 1   | 30        |
|            |          | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (GenX acid) (HFPODA) | 59250-047         | 37     | 1.9             | 0.18  | ng/L  | 37        | 99    | 70 130 | 11  | 30        |
|            |          | 4,8-dioxa-3h-perfluorononanoic acid (ADONA acid) (ADONA)                      | 59250-047         | 40     | 1.9             | 0.17  | ng/L  | 37        | 108   | 70 130 | 3   | 30        |
|            |          | 11-chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CLPF3OUDS)              | 59250-047         | 35     | 1.9             | 0.18  | ng/L  | 37        | 95    | 70 130 | 6   | 30        |
|            |          | 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9CLPF3ONS)                  | 59250-047         | 39     | 1.9             | 0.13  | ng/L  | 37        | 106   | 70 130 | 7   | 30        |
|            |          | 13C2-PFTeA SUR  | 59250-047         | 82     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C2-PFDoA SUR  | 59250-047         | 80     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C7-PFUnA SUR  | 59250-047         | 96     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C6-PFDA SUR   | 59250-047         | 87     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C9-PFNA SUR   | 59250-047         | 93     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C8-PFOA SUR   | 59250-047         | 85     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C4-PFHpA SUR  | 59250-047         | 75     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C5-PFHxA SUR  | 59250-047         | 52     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C5-PFPeA SUR  | 59250-047         | 252    |                 |       | %     |           | *     | 50 200 |     |           |
|            |          | 13C-PFBA SUR  | 59250-047         | 88     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C8-PFOS SUR   | 59250-047         | 88     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C3-PFHxS SUR  | 59250-047         | 80     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C3-PFBS SUR   | 59250-047         | 76     |                 |       | %     |           |       | 50 200 |     |           |
|            |          | 13C2-8:2FTSA SUR  | 59250-047         | 116    |                 |       | %     |           |       | 50 200 |     |           |

| Method     | QC ID    | Parameter        | Associated Sample | Result | Reporting Limit | DL Units | Amt Added | %R     | Limits | RPD | RPD Limit |
|------------|----------|------------------|-------------------|--------|-----------------|----------|-----------|--------|--------|-----|-----------|
| SOP-5317r0 | MSD14427 | 13C2-6:2FTSA SUR | 59250-047         | 149    |                 | %        |           |        | 50 200 |     |           |
|            |          | 13C2-4:2FTSA SUR | 59250-047         | 112    |                 | %        |           |        | 50 200 |     |           |
|            |          | 13C8-FOSA SUR    | 59250-047         | 20     |                 | %        | *         | 50 200 |        |     |           |
|            |          | D3-NMeFOSA SUR   | 59250-047         | 1      |                 | %        | *         | 10 100 |        |     |           |
|            |          | D5-NetFOSAA SUR  | 59250-047         | 81     |                 | %        |           | 50 200 |        |     |           |
|            |          | D3-NMeFOSAA SUR  | 59250-047         | 71     |                 | %        |           | 50 200 |        |     |           |
|            |          | 13C3-HFPO-DA SUR | 59250-047         | 50     |                 | %        |           | 50 200 |        |     |           |



124 Heritage Avenue #16  
Portsmouth, NH 03801  
603-436-2001  
absoluterourceassociates.com

## CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

59110

PAGE 1 OF 2

Company Name: GoodInsight  
Company Address: 1 March Dr Suite 201 Littleton, MA 01460  
Report To: Cam Simmons  
Phone #: 978 679 1600  
Invoice to: Lee  
Email: CASimmons@glainc.com  
PO #:

Project Name: 60 Olympia - FDDA  
Project #: 2491  
Project Location: NH MA ME VT  
Accreditation Required? N/Y:  
Protocol: RCRA SDWA NPDES  
MCP NHDES DOD  
Reporting QAPP GW-1 S-1  
Limits: EPA DW Other  
Quote #  
 NH Reimbursement Pricing

## ANALYSIS REQUEST

| Lab Sample ID<br>(Lab Use Only) | Field ID    | # CONTAINERS | Matrix | Preservation Method | Sampling   |       |     | SAMPLER |
|---------------------------------|-------------|--------------|--------|---------------------|------------|-------|-----|---------|
|                                 |             |              |        |                     | DATE       | TIME  |     |         |
| 39110 -01                       | MW-2035     | 2            | X      |                     | 10/20/2021 | 9:25  | S6C |         |
| -02                             | MW-2021D    |              |        |                     |            | 9:55  | CAS |         |
| -03                             | MW-205D     |              |        |                     |            | 10:50 | CAS |         |
| -04                             | MW-206D     |              |        |                     |            | 11:55 | S6C |         |
| -05                             | MW-215m     |              |        |                     |            | 11:40 | CAS |         |
| Q6 -06                          | MW-215m ms  |              |        |                     |            | 11:40 |     |         |
| 10/25/21 -07                    | MW-215m msd |              |        |                     |            | 11:40 |     |         |
| -08                             | MW-215 DUP  |              |        |                     |            | 12:40 |     |         |
| -09                             | MW-216 S    |              |        |                     |            | 13:30 |     |         |
| -10                             | MW-217 m    |              |        |                     |            | 12:50 | S6C |         |
| -11                             | MW-401A     |              |        |                     |            | 13:45 | CAS |         |

|   |  |                             |  |
|---|--|-----------------------------|--|
| <b>TAT REQUESTED</b>  | See <a href="http://absoluterourceassociates.com">absoluterourceassociates.com</a> for sample acceptance policy and current accreditation lists. | <b>SPECIAL INSTRUCTIONS</b> |  |
| Priority (24 hr)* <input type="checkbox"/>                      |  |                             |  |
| Expedited (48 hr)* <input type="checkbox"/>                     |  |                             |  |
| Standard (10 Business Days) <input checked="" type="checkbox"/> |  |                             |  |
| *Date Needed _____  |  |                             |  |

REPORTING INSTRUCTIONS PDF (e-mail address) *CASimmons@glainc.com*

RECEIVED ON ICE  YES  NO  
TEMPERATURE \_\_\_\_\_ °C

|   |  |                          |   |                          |
|---|--|--------------------------|---|--------------------------|
| <b>CUSTODY RECORD</b><br>QSD-01 Revision 03/09/2020 | Relinquished by Sampler: <i>Barry J. Johnson</i> | Date 10/20/21 Time 17:00 | Received by: <i>Barry J. Johnson</i>            | Date 10/25/21 Time 12:17 |
|   | Relinquished by: <i>Barry J. Johnson</i>         | Date 10/25/21 Time 12:17 | Received by: <i>Barry J. Johnson</i>            | Date _____ Time _____    |
|   | Relinquished by: <i>Barry J. Johnson</i>         | Date 10/25/21 Time 13:30 | Received by Laboratory: <i>Barry J. Johnson</i> | Date 10/25 Time 13:30    |



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PAGE 2 OF 2

## CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Lab ID Here

### ANALYSIS REQUEST

Company Name: GeoInsight Inc.  
Company Address: Monarch Drive Suite 201  
Littleton, MA 01460  
Report To: Cam Simmons  
Phone #: 978 457 1600  
Invoice to: Cec  
Email: CASimmons@geoinc.com  
PO #:

Project Name: 60 Olympic-PDDA  
Project #: 2491  
Project Location: NH (MA) ME VT  
Accreditation Required? N/Y: \_\_\_\_\_  
Protocol: RCRA MCP SDWA NHDES NPDES DOD  
Reporting: QAPP GW-1 S-1  
Limits: EPA DW Other  
Quote # \_\_\_\_\_  
 NH Reimbursement Pricing

- | Lab Sample ID<br>(Lab Use Only)   | Field ID | # CONTAINERS | Matrix | Preservation Method | Sampling |     |          |       |         |
|---|----------|--------------|--------|---------------------|----------|-----|----------|-------|---------|
|   |          |              | WATER  | SOLID               | OTHER    | HCl | DATE     | TIME  | SAMPLER |
| -12   | MW-401B  | 2            | X      |                     |          |     | 10/20/21 | 13:50 | 560     |
| <input type="checkbox"/> VOC 8260 <input type="checkbox"/> VOC 8260 NHDES <input type="checkbox"/> VOC 8260 MADEP<br><input type="checkbox"/> VOC 624.1 <input type="checkbox"/> VOC BTEX MBBE, only <input type="checkbox"/> VOC 8021 VT<br><input type="checkbox"/> VPH MADEP <input type="checkbox"/> GRO 8015 <input type="checkbox"/> 1,4-Dioxane<br><input type="checkbox"/> VOC 524.2 <input type="checkbox"/> VOC 524.2 NH List <input type="checkbox"/> Gases-List:<br><input type="checkbox"/> TPH 8100 <input type="checkbox"/> DRO 8015 <input type="checkbox"/> EPH MADEP <input type="checkbox"/> TPH Fingerprint<br><input type="checkbox"/> 8270PAH <input type="checkbox"/> 8270ABN <input type="checkbox"/> 625.1 <input type="checkbox"/> EDB<br><input type="checkbox"/> 8082 PCB <input type="checkbox"/> 8081 Pesticides <input type="checkbox"/> 608.3 Pest/PCB<br><input type="checkbox"/> PFAS 537.1 <input checked="" type="checkbox"/> PFAS 533 <input type="checkbox"/> PFAS Isotope dilution<br><input type="checkbox"/> O&G 1664 <input type="checkbox"/> Mineral O&G 1664<br><input type="checkbox"/> pH <input type="checkbox"/> BOD <input type="checkbox"/> Conductivity <input type="checkbox"/> Turbidity <input type="checkbox"/> Apparent Color<br><input type="checkbox"/> TSS <input type="checkbox"/> TDS <input type="checkbox"/> TS <input type="checkbox"/> TVS <input type="checkbox"/> Alkalinity <input type="checkbox"/> Acidity<br><input type="checkbox"/> RCRA Metals <input type="checkbox"/> Priority Pollutant Metals <input type="checkbox"/> TAL Metals <input type="checkbox"/> Hardness<br><input type="checkbox"/> Total Metals-List:<br><input type="checkbox"/> Dissolved Metals-List:<br><input type="checkbox"/> Ammonia <input type="checkbox"/> COD <input type="checkbox"/> TKN <input type="checkbox"/> TN <input type="checkbox"/> TOC <input type="checkbox"/> Ferrous Iron<br><input type="checkbox"/> T-Phosphorus <input type="checkbox"/> Bacteria P/A <input type="checkbox"/> Bacteria MPN <input type="checkbox"/> Enterococci<br><input type="checkbox"/> Cyanide <input type="checkbox"/> Sulfide <input type="checkbox"/> Nitrate + Nitrite <input type="checkbox"/> Ortho P <input type="checkbox"/> Phenols<br><input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Chloride <input type="checkbox"/> Sulfate <input type="checkbox"/> Bromide <input type="checkbox"/> Fluoride<br><input type="checkbox"/> Corrosivity <input type="checkbox"/> Ignitability/FP<br><input type="checkbox"/> TCLP Metals <input type="checkbox"/> TCLP VOC <input type="checkbox"/> TCLP SVOC <input type="checkbox"/> TCLP Pesticide<br><input type="checkbox"/> Subcontract <input type="checkbox"/> Grain Size <input type="checkbox"/> Herbicides <input type="checkbox"/> Asbestos |          |              |        |                     |          |     |          |       |         |

Grab (G) or Composite (C)

| TAT REQUESTED                              | See <a href="http://absoluteressourcesassociates.com">absoluteressourcesassociates.com</a> for sample acceptance policy and current accreditation lists. |  | SPECIAL INSTRUCTIONS |  |
|--|--|--|----------------------|--|
| Priority (24 hr)* <input type="checkbox"/> | Expedited (48 hr)* <input type="checkbox"/>  | Standard (10 Business Days) <input type="checkbox"/> | *Date Needed _____   | REPORTING INSTRUCTIONS <input type="checkbox"/> PDF (e-mail address) <u>CASimmons@geoinc.com</u> |

| REPORTING INSTRUCTIONS <input type="checkbox"/> HARD COPY REQUIRED <input checked="" type="checkbox"/> EDD |  | RECEIVED ON ICE <input type="checkbox"/> YES <input type="checkbox"/> NO | TEMPERATURE <u>0</u> °C                |
|--|--|--|--|
| Relinquished by Sampler: <u>Cam Simmons</u>  | Date <u>10/20/21</u> Time <u>17:00</u> | Received by: <u>Mary Durhance</u>  | Date <u>10/25/21</u> Time <u>12:17</u> |

|   |                                       |  |                                   |  |
|---|---------------------------------------|--|-----------------------------------|--|
| <b>CUSTODY RECORD</b><br>OSD-01 Revision 03/09/2020 | Relinquished by: <u>Cam Simmons</u>   | Date <u>10/20/21</u> Time <u>17:00</u> | Received by: <u>Mary Durhance</u> | Date <u>10/25/21</u> Time <u>12:17</u> |
|   | Relinquished by: <u>Mary Durhance</u> | Date <u>10/25/21</u> Time <u>12:17</u> | Received by: <u></u>              | Date <u></u> Time <u></u>              |
|   | Relinquished by: <u>Mary Durhance</u> | Date <u>10/25/21</u> Time <u>13:30</u> | Received by Laboratory: <u></u>   | Date <u>10/25</u> Time <u>13:30</u>    |

# Sample Receipt Condition Report

59110

**Absolute Resource Associates**

**Job Number:**

Samples Received from:  UPS  FedEx  USPS  Lab Courier  Client Drop-off  \_\_\_\_\_  
 Custody Seals - present & intact:  Yes  No  N/A CoC signed:  Yes  No  
 Receipt Temp: 0 °C Samples on ice?  Yes  No  N/A Sampled < 24 hrs ago?  Yes  No  
 PFAS-only real ice?  Yes  No  N/A Any signs of freezing?  Yes  No

Comments:

| Preservation / Analysis                         | Bottle Size/Type & Quantity |          |           |          |          | Check pH for ALL applicable* samples and document: |
|---|-----------------------------|----------|-----------|----------|----------|--|
|   | 40mL(G)                     | 250mL(P) | 500mL(P)  | 1L(G)    |          |  |
| HCl   | 40mL(G)                     | 250mL(P) | 500mL(P)  | 1L(G)    |          |  |
| HNO <sub>3</sub>                                | 125mL(P)                    | 250mL(P) | 500mL(P)  |          |          |  |
| H <sub>2</sub> SO <sub>4</sub>                  | 40mL(G)                     | 60mL(P)  | 125mL(P)  | 250mL(P) | 500mL(P) |  |
| NaOH  | 125mL(P)                    | 250mL(P) |           |          |          |  |
| (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> | 60mL(P)                     | 125mL(P) | 250mL(P)  |          |          |  |
| ZnAc-NaOH                                       | 125mL(P)                    | 250mL(P) |           |          |          |  |
| Trizma  | 125mL(P)                    | 250mL(P) |           |          |          | *pH ✓ by analyst: VOC, PFAS, TOC, O&G              |
| NH <sub>4</sub> Ac                              | 125mL(P)                    | 250mL(P) | <u>ZH</u> |          |          | Residual Cl not present:<br>ABN625 Pest608         |
| NaS <sub>2</sub> O <sub>3</sub>                 | 40mL(G)                     | 120mL(P) |           |          |          | Bacteria ResCl ✓ by analyst                        |
| MeOH  | 20mL(G)                     | 40mL(G)  |           |          |          |  |
| None (solid)                                    | 2oz(G)                      | 4oz(G)   | 8oz(G)    | Syringe  |          | PC Dry applicable? Y N                             |
| None (water)                                    | 40ml (G)                    | 60mL(P)  | 125mL(P)  | 250mL(P) | 500mL(P) | 1L(G) 1L (P)                                       |

| Login Review   | Yes | No | NA | Comments   |
|--|-----|----|----|--|
| Proper lab sample containers/enough volume/correct preservative?   | X   |    |    |  |
| Analyses marked on COC match bottles received?   | X   |    |    |  |
| VOC & TOC Water-no headspace?  |     |    |    |  |
| VOC Solid-MeOH covers solid, no leaks, Prep Expiration OK?   |     |    | X  |  |
| PFAS: ARA bottles & samples/FRB same Lot#? QC rec'd, if req'd?   | X   |    |    | Lot ID#: <u>20110055</u>   |
| Bacteria bottles provided by ARA?  |     | X  |    |  |
| Samples within holding time?   | X   |    |    |  |
| Immediate tests communicated in writing:<br>NO <sub>x</sub> , NO <sub>2</sub> , PO <sub>4</sub> , pH, BOD, Coliform/E. coli (P/A or MPN), Enterococci, Color<br>Surfactants, Turbidity, Odor, CrVI, Ferrous Iron, Dissolved Oxygen, Unpres 624 |     |    | X  |  |
| Date, time & ID on samples match CoC?  | X   |    |    |  |
| Rushes communicated to analyst in writing?   |     | X  |    |  |
| Subcontract note on login board?   |     |    | X  |  |
| Pesticides EPA 608 pH5-9?  |     |    | X  |  |
| Compliance samples have no discrepancies/require no flags?   |     |    | X  | (Or must be rejected)  |
| Log-in Supervisor notified immediately of following items:   |     |    | X  | Discrepancies, compliance samples (NHDES, MADEP, DoD etc.) or uncommon requests. |

Inspected and Received By: BLM

Date/Time: 10/25/1507

## Peer Review Checklist

- |  |   |   |   |
|--|---|---|---|
| <input type="checkbox"/> Client ID/Project Manager | <input type="checkbox"/> On Ice, Temperature OK?            | <input type="checkbox"/> Sample IDs             | <input type="checkbox"/> Analyses in Correctly  |
| <input type="checkbox"/> Project Name              | <input type="checkbox"/> PO# (if provided)                  | <input type="checkbox"/> Matrix                 | -references                                     |
| <input type="checkbox"/> TAT/rushes communicated   | <input type="checkbox"/> Sub samples sent? Shipping Charge? | <input type="checkbox"/> Date/Time collected    | -wastewater methods                             |
| <input type="checkbox"/> Received Date/Time        | <input type="checkbox"/> Issues noted above communicated?   | <input type="checkbox"/> Short HTs communicated | <input type="checkbox"/> Notes from CoC in LIMS |

Reviewed By:

Date: \_\_\_\_\_

Notes: (continue on back as needed)

Initials \_\_\_\_\_ Date \_\_\_\_\_ What was sent?

Uploaded / PDF \_\_\_\_\_ Report / Data / EDD / Invoice  
 Uploaded / PDF \_\_\_\_\_ Report / Data / EDD / Invoice  
 Uploaded / PDF \_\_\_\_\_ Report / Data / EDD / Invoice